

7455



U.S. Army Environmental Center  
Environmental Technology Division  
Edgewood Area  
Aberdeen Proving Ground, Maryland

EVALUATION OF A  
TRANSPORTABLE  
HOT-GAS  
DECONTAMINATION  
SYSTEM FOR THE  
DECONTAMINATION  
OF EXPLOSIVES-  
CONTAMINATED  
DEBRIS & PIPING

VALIDATION TEST REPORT

VOLUME III  
Appendices E-L

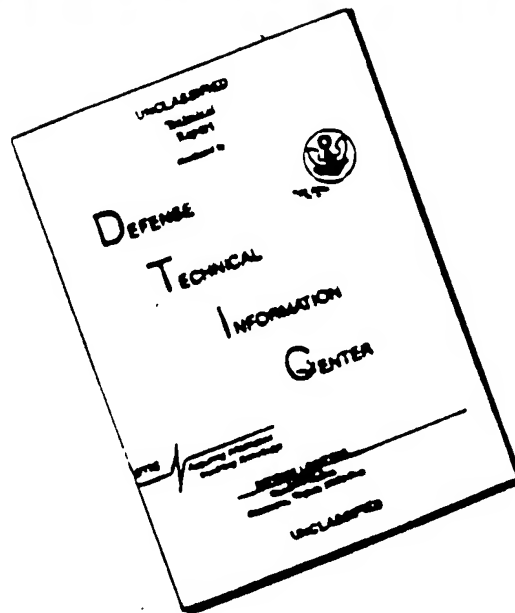
**WESTON**  
MANAGERS DESIGNERS/CONSULTANTS

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**VALIDATION TEST REPORT  
FOR THE  
TRANSPORTABLE HOT-GAS DECONTAMINATION SYSTEM  
USED TO SUPPORT THE DECONTAMINATION OF  
EXPLOSIVES-CONTAMINATED PIPING AND DEBRIS**

**VOLUME III: APPENDICES E-L**

Contract No. DACA 31-91-D-0079  
Task Order 12

Prepared for

**U.S. ARMY ENVIRONMENTAL CENTER (USAEC)  
SFIM-AEC-ETD  
Edgewood Area  
Aberdeen Proving Ground, MD 21010-5401**

September 1996

**DTIC QUALITY INSPECTED**

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**APPENDIX E**

**CONTROL ROOM LOGS FOR FURNACE RUNS 1-18**

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# VALIDATION TEST #1

## 12HR SOAK

| <u>Soak Period</u> | <u>Total Soak Time</u> | <u>Soak Time Remaining</u> | <u>Soak Completion Time</u> |
|--------------------|------------------------|----------------------------|-----------------------------|
| 0132 - 0554        | 4:22                   | 7:38                       |                             |
| 0700 - 0847        | 1:47                   | 5:51                       |                             |
| 0908 + 551         |                        |                            | 1459 2:59PM                 |



Validation Test #1  
Control Room Log

pg 1

31 January ~~to~~ 1996

1634 Light BURNER to furnace

1753 Shutdown of AB. (High temp) ?

1755 A-Burn ON

1822 ~~E~~ reached 200°F; 70% on furnace damper  
Started ramp @ 50°F/hr

1832 1832 Inlet <sup>em gas</sup> sample started

1834 1834 Stack samples started

0006 Bleed Air Damper on furnace set at ~~65%~~ 65% open

0110 - Approximate end for exposures trains @ stack and inter-connecting duct.

- Remaining tests will end between 0110 and approx 030

0126 - 24p Chrome train completed. - All emissions testing completed except mid-soak period exposures train.

0132 500°F Soak Time Started; Soak for 12 hrs  
Expected end of Soak 1:30 pm.

0323 Reduce Bleed Air Damper from 50% to 45%

0315 Changed PID constants in TIC-131 to reduce cycling in Afterburner.  
Data will show ~~a~~ cycling reduced in NO<sub>x</sub>, O<sub>2</sub>, CO<sub>2</sub> also.

0353 Switched TE-203 & TE-204 at 3:53:14 to check accuracy of transmitters checked reading 3:53:44 and then switched them back. Transmitters had same readings showing good calibrations.

0420 Increased Bleed Air Damper from 45% to 50%

0520 Increased Bleed Damper to 60%

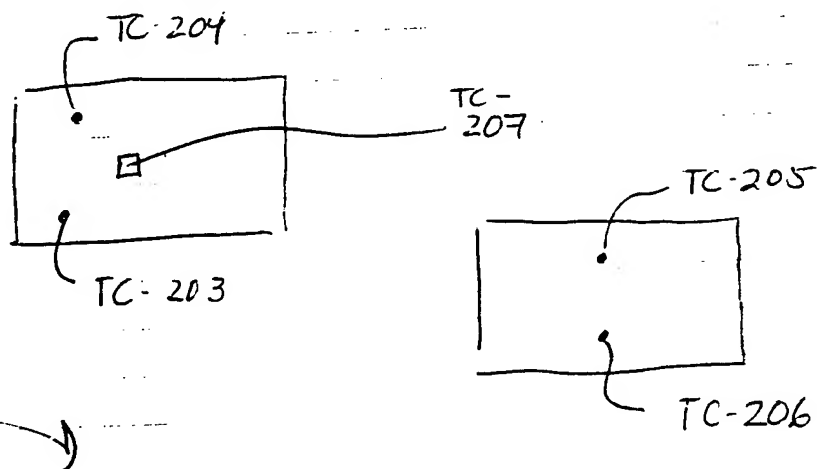
VALIDATION TEST #1  
CONTROL ROOM LOG

pg 2

0538 Reduced Bleed Air to 50%  
0554 BURNERS TRIP OFF Lost Draft Soak Time 4 hr <sup>22</sup>~~20~~ min  
0556 AFTER BURNER RE LIT  
0610 LIT FURNACE  
0638 Furnace Temp back to 500° Avg Temp 447°  
0644 Start Inlet sampling Cntrl Temp 526°, Avg 469°  
0656 Avg Temp 499°  
0700 Avg Temp 500° Re-start soak time, Soak Time Left <sup>7</sup>~~6~~ hr <sup>38</sup>~~30~~ min  
Expected End of soak time ~~1430~~ 1438  
0847 Lost Burners High Temp in A-Burner Stop sampling,  
852 A-Burner relit Stop soak time  
856 Furnace relit  
901 Furnace Temp back to 500°  
908 Avg Temp 500°  
910 Restart sampling  
1005 End inlet sampling  
1348 End Soak period begin ramping down furnace temp  
1354 Shut Furnace Burner off  
1430 Shut down Afterburner  
1630 OPEN FURNACE DOOR / TAG-OUT BURNERS

\* \* NO<sub>x</sub> Analyzer was working irregularly during test. Post test investigation indicated Clog in sample line. NO<sub>x</sub> readings through 1st test ~~was~~ <sup>could</sup> possibly ~~not~~ be incorrect and should not be relied on!

# VALEDATION #2 Feb 2, 96



- 10:35 Roll call complete begin start-up procedure
- 11:06 start logger
- 11:08 start A-Burner Heat-up
- 11:28 A-Burner 1750°
- 11:30 Light Furnace Begin Heat-Up
- 1300 Furnace Temp 250° Begin 50°/Hr Ramp
- 1337 Jim unplugged TC-205 to verify functionality and/or presence of a frayed shot, etc
- 1338 TC-205 plugged back; no sign of frayed lead or TC line
- 1339 TC-205 unplugged; checking transmitter
- 1348 TC-205 plugged back in. still reading low
- 1405 start sampling

# VALEDATION TEST #2

2 FEB

1400

At approx. 1600 or before Furnace draft pressure was indicating positive pressure. Duct pressure at that time was  $-.70$  and therefore the furnace was not shut off, icing had developed on the low side of the draft transmitter giving a false indication of positive pressure. After clearing the ice plug, the furnace draft reading came back to negative

1700

Begin 6 Hr Soak period

Expected End of Soak 2300

1710

Begin lowering Furnace setpoint from  $450^{\circ}$  but maintaining Average material temp at  $400^{\circ}$

1724

Begin closing bleed air damper

2038

End Stack sampling

2100

END INLET SAMPLING

2300

End <sup>6hr</sup> Soak period begin ramping down & cooling Furnace

2304

Shut Furnace burner off

2321

Shut After burner off, Furnace Temp  $199^{\circ}$

~~2352~~

Continue cooling Furnace

2352

Shut ID Fan off, Furn. Temp  $84^{\circ}$

2352

Turned Logger off

From Start of Furnace to End of Soak Period

11:30 furnace - 2300  $\Rightarrow$  690 min

11 hr 30 min

2/3/94

10:10

START AFTERBURNER TO WARM-UP  
THE SYSTEM SO WE CAN  
OPEN THE DOOR DUE TO THE ICE

10:15

AFTERBURNER = 600 °F

START FURNACE BURNER

12:00

Started Post-Test Sampling for  
Validation Test #2  
16°F outside; lite snow

Jeff O'Neill & Jack Mills working  
in Stack Team Trailer

12:00

Jeff & Jack planning on being back  
here tomorrow @ 7:00am

1:30

Vu & Matt done post test sampling.

3:00

Vu & Matt spiking for Test #3.  
furnace test plates will be spiked  
w/ Tetra.

5:30

Vu & Matt done completed spiking for  
test #3

# VALIDATION TEST #3

4 FEB 96 50°/Hr Ramp, 500° 4 hr Soak

- 0728 Start Afterburner
- 0812 start Furnace  
Difficulties lighting furnace with cold weather
- 831 Furnace burner stayed lit
- 1000 Holding temp at 250° while taking care of icing problems with cooling water for probes
- 1300 Begin 50°/Hr heat-up
- 1406 Start Air sampling on stack and furnace, Furnace temp 300°
- 1854 Begin 4 hr soak Avg Temp 500°
- 2048 Complete Stack sampling
- 2106 Complete Furnace sampling
- 2254 End Soak Period begin shutting furnace down
- 2305 Shut Furnace off, begin cooling
- 2323 Shut Afterburner off, continue cooling
- 23 Shut ID Fan off, Logger

From Start of furnace to End of Soak Period

0812 - 2254  $\Rightarrow$  822 min

13.7 hr or

13 hr 42 min

# VALIDATION TEST #4

6 FEB. 96

18:50 START COMPUTER LOGGER

18:55 CALIBRATING CEM

21:02 LIT AFTERBURNER

PROBLEM WITH FURNACE TAC ANALYZER

## VALIDATION TEST # 4

7 FEB. 96

02:17 LIT FURNACE BURNER  
PROGRAM CONTROL PROGRAMMED FOR 250°F  
IN 1 hr.

0800 Start of Soak Cycle.

1420 End Soak cycle.  
Adjust furnace setpoint to 200°F

1500 Turn off furnace burner  
off.

1545 Turn-off Afterburner.

## VALIDATION TEST # 5

22:45 FURNACE LOADED  
CALIBRATING CEM

23:00 LIT SCC BURNER

23:22 LIT FURNACE BURNER

30 min TO 300°F

4 hr 40 min TO 650°F (75°/hr)

4 hr SOAK AT 650°

5 min TO 0° SETPOINT



8 FEB. 96

0405 START SOAK CYCLE  
0810 STOP SOAK START COOL DOWN  
1030 CUT FURNACE BURNER OFF  
1034 CUT AFTER BURNER OFF  
1037 Data logger off.

# VALIDATION TEST #6

12 FEB 96

0757 START LOGGER

0802 LIT SCOT BURNER

09:57 LIT FURNACE BURNER

TEST #6, 75°F/hr RAMP, 600°F 2hr

SOAK TIME RANGE

10:06 CHANGED SETPOINT ON CHART RECORDER  
FROM 600°F TO 700°F RANGE

10:45 THERMOCOUPLE TIT 205 MALFUNCTIONING

JIM H. INVESTIGATING

10:54 REPAIRED SHORT IN THERMOCOUPLE TIT  
205 PLUG

14:50 AVG. FURNACE TEMP. 600°F, STARTING  
2hr. SOAK CYCLE

16:50 2hr SOAK CYCLE COMPLETE, START  
COOL DOWN

17:40 CUT AFTERBURNER OFF

17:43 SHUT DATA LOGGER OFF

# VALIDATION TEST # 7

13 FEB, 96

- 16:15 START AFTERBURNER HEAT-UP
- 16:20 START FURNACE CHART RECORDER
- 16:26 LIT FURNACE BURNER, 100°F PER hr.  
RAMP-UP, 600°F 1 hr SOAK
- 16:37 TIT-145 Range was changed from  
0-1850°F to 0-2000°F. Logger is  
still looking at 0-1850° range.  
Correction for logged data will  
be  $(\text{logged number} \div 1850) \times 2000$   
Hand written log will be logged  
off of TIS-145 controller
- 17:25 FURNACE BURNER OFF 1 MIN. DUE TO  
AFTERBURNER TEMP. GOING BELOW 1750°F
- 21:13 START 600° SOAK FOR 1 HOUR
- 22:18 STOP SOAK : START COOL DOWN
- 0019 TURN FURNACE BURNER OFF
- 0043 TURN AFTERBURNER OFF
- 0045 SHUT DATA LOGGER OFF

15 Feb 94

# Validation Test #8

0930

Matt & Kevin start loading  
and spiking at the  
furnace.

1205

Done Spiking furnace.

1228

LIT AFTERBURNER

1230

START FURNACE CHART RECORDER

1230

START FURNACE BURNER, START  
VALIDATION TEST #8, 100°F PER hr  
RAMP UP, 500°F 2 hr SOAK

16:15

FURNACE AVG. TEMP. 500°F, STARTING  
2 hr. SOAK CYCLE

18:15

2 hr SOAK CYCLE COMPLETE, STARTING FURNACE  
COOL DOWN

18:18

SHUT OFF FURNACE BURNER

18:54

FURNACE TEMP BELOW 200°F, SHUT  
OFF AFTERBURNER

2025

SHUT LOGGER OFF

# Validation Test #9

04:10

Spike System. Unused  
INT crystal from Test #1 were  
added with extra acetone

05:15

Pore Spiking

19 FEB 96 TEST #9 100°F AN HOUR TO 600°F IMMEDIATE

CUTOFF

1200 START AFTER BURNER

1250 START FURNACE

1250 START CHART

1700 FURNACE 22K AFTER BURNER TRIP OFF HIGH TEMP

1707 RELIT AFTER BURNER

1713 RELIT FURNACE

1731 RESTARTED RAMP

1908 FURNACE Avg. TEMP. 600°F, STARTING FURNACE  
COOLDOWN

1918 SHUT OFF FURNACE BURNER, WENT TO  
100% ON BLEED AIR DAMPER

20:03 FURNACE TEMP. 193°F, SHUT OFF  
AFTERBURNER, I.D. FAN DAMPER 90%

2045 STOPPED COMPUTER DATA LOGGER

# VALIDATION TEST # 10

20 FEB. 96

150°F hr RAMP UP

550°F SOAK TEMP.

1 hr SOAK TIME

18:47 START DATA LOGGER

18:49 LIT AFTERBURNER

19:00 JIM H. CALIBRATING CEM

19:49 START CHART RECORDER

19:52 LIT FURNACE BURNER, STARTED RAMP UP

23:38 FURNACE AVG. TEMP. 550°F, STARTING 1 hr.

~~23:3~~ SOAK

21 FEB 96

0038 1 hr SOAK CYCLE COMPLETE, STARTING  
FURNACE COOL DOWN

0120 FURNACE TEMP. 193°F, STOPPED AFTERBURNER

0132 STOPPED COMPUTER DATA LOGGER

0547 START COMPUTER DATA LOGGER TO UPDATE  
THERMOCOUPLE TEMPS.; STOP DATA LOGGER

TEST #11

22 FEB 96

150° hr RAMP

400° SOAK FOR 1 hour

1000 START AFTER BURNER

1000 START DATA LOGGER

1001 START CHART RECORDER

1047 START FURNACE

1228 START SOAK 1 HOUR AT 400°

1328 1 HOUR SOAK TIME COMPLETE

START FURNACE COOL DOWN

1430 SHUT AFTER BURNER

# VALIDATION TEST #12

26 FEB. 96

11:50 LIT AFTERBURNER  
12:36 START DATA LOGGER, CHART RECORDER  
12:50 LIT FURNACE BURNER  
START 200°F hr RAMP-UP, 300°F  
SOAK TEMP, 1hr. SOAK TIME

TT-100 <sup>Thermocouple</sup> was moved (prior to starting the test) to measure the Furnace Exit Gas Temp within the interconnect duct approx. 10" from the furnace shell. A Type K TC was used and the ADAM module was reprogrammed and calibrated. <sup>limit.</sup>

14:58 START 1hr 300°F SOAK CYCLE

~~13:58~~

1558 COMPLETE 1hr SOAK START FURNACE COOL DOWN

1600 SHUT OFF FURNACE

Ref 1 Shut. Down Afterburner

1840 SHUT CHART RECORDER OFF

SHUT DOWN AFTER BURNER



# TEST # 13

27 FEB. 96

- 08:06 START DATA LOGGER, LITE AFTERBURNER  
200°F/hr. RAMP UP, 500°F SOAK TEMP,  
1hr. SOAK CYCLE
- 08:39 START CHART RECORDER, LITE FURNACE  
BURNER
- 10:51 FURNACE AVG. TEMP. 500°F, START 1hr.  
SOAK CYCLE CONTROLLER
- 10:53 AFTERBURNER THERMO COUPLE TEMP.  
READING MALFUNCTIONING. SWITCHED  
CONTROLLER FROM AUTO TO MANUAL
- 11:53 1hr. SOAK CYCLE COMPLETE, LOWERING  
FURNACE TEMP.
- 11:58 LOST AFTERBURNER ~~TEMP~~ <sup>BURNER</sup> DUE TO HIGH  
TEMP. RELIT AFTERBURNER BURNER
- 13:15 SHOT DOWN AFTERBURNER
- 1500 SHUT AFTERBURNER FAN OFF

TEST # 14

28 FEB 96

11:35

START DATA LOGGER, CHART RECORDER

11:40

LIT FURNACE BURNER.

11:41

WENT TO AUTO - RUN ON FURNACE TEMP.

CONTROLLER

300°F IN RADIP. 600°F SOAK TIME;

1 hr SOAK CYCLE

13:35

LOST FURNACE BURNER DUE TO HIGH TEMP. (TEMP SPIKE)

13:37

LOST AFTERBURNER BURNER, LOW AFTERBURNER PRESSURE DUE TO FURNACE BURNER LITING

13:39

LOST FURNACE BURNER, HIGH TEMP. SPIKE

13:48

LOST FURNACE BURNER, HIGH TEMP. SPIKE

14:05

LOST FURNACE BURNER DUE TO HIGH TEMP. SPIKE

14:17

FURNACE AVG. TEMP. 600°F, STARTING 1 hr. SOAK CYCLE.

15:19

1 hr SOAK COMPLETE

15:25

SHUT FURNACE BURNER OFF

16:16

SHUT OFF OXIDIZER

17:17

STOP CHART RECORDER

TEST #10

1 MARCH 96

0805 LIT OXIDIZER  
0839 START DATA LOGGER  
0844 START CHART RECORDER  
0846 LIT FURNACE BURNER  
0847 START RAMP-UP  $300^{\circ}\text{F/hr}$ ,  $600^{\circ}\text{F}$   
SOAK, 1 hr SOAK CYCLE

Control, Record, & Hi-Limit TCS  
were moved prior to start-up to  
avoid local high temp. readings  
on Hi-Limit when explosive  
spike material flashes.

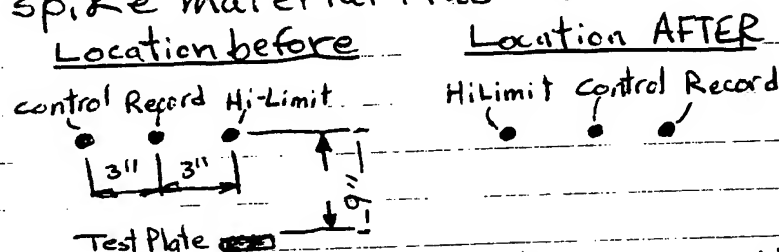


Chart recorder may indicate temp. spike  
if explosive material flashes

1037 LOST FURNACE BURNER DUE TO high  
TEMP SPIKE, RELIT BURNER  
1039 LOST FURNACE BURNER DUE TO high  
TEMP. SPIKE, RELIT BURNER  
1052 FURNACE Avg. TEMP.  $600^{\circ}\text{F}$ , START 1 hr.  
SOAK CYCLE  
1152 1 hr SOAK COMPLETE, STARTING FURNACE  
COOL DOWN  
1238 FURNACE TEMP. BELOW  $200^{\circ}\text{F}$ , STOPPED  
AFTER BURNER  
1316 STOPPED DATA LOGGER

TEST #16A 6 MARCH 96

Changes made prior to starting  
Test.

1. Furnace control thermocouple  
TE-202 was moved from the furnace  
chamber and inserted into the  
furnace exit duct in order to measure  
and control based on exit gas temp.
2. Thermocouple TE-100 which was  
measuring furnace exit gas temp,  
was moved to measure ID Fan Inlet  
Gas Temp.
3. Stack NOx analyzer was moved  
to the Interconnect Duct sample  
line and was set-up to measure  
NO instead of NOx.
4. Internal bleed air duct was rotated  
180° back to its original position.

1507 START AFTER BURNER

TEST #16 TNT SPIKE ONLY

600°F

300°F / HR RAMP NO SOAK TIME

1514 LOGGER ON

1520 START CHART RECORDER

1531 STARTED FURNACE

1532 Start Ramp at 100°

1710 Material temp avg. 600°

1720 Shut-off Furnace

1747 Shut-off After burner

1800 Shut-off Logger

# TEST 16B

6 MAR. 96

- 2204 START DATA LOGGER
- 2206 START OXIDIZER
- 2230 LIT FURNACE BURNER; START CHART RECORDER.
- 2231 START 300°F hr. RAMP-UP TO 600°F  
NO SOAK TIME
- 2351 FURNACE AVG. TEMP 601°F, SWITCHED  
FURNACE CONTROLLER FROM AUTO TO  
MANUAL, START LOWERING FURNACE  
TEMP.
- 2354 STOPPED FURNACE BURNER
- 3030 STOPPED ~~OX~~ OXIDIZER BURNER,  
STOPPED DATA LOGGER

## TEST 16C

7 MARCH 96

- 1305 Start Datalogger
- 1306 Start Afterburner
- 1321 Start Furnace
- 1325 Start Furnace Ramp @ 100°
- 1453 Avg temp 600° ~~begin cooling down~~
- 1500 Begin cooling down
- 1502 STOPPED FURNACE BURNER
- 1538 STOPPED AFTERBURNER, STOPPED DATA LOGGER

## TEST 16D

- 1947 START DATA LOGGER
- 1955 START AFTERBURNER
- 2001 START CHART RECORDER
- 2008 HIT FURNACE
- 2012 START FURNACE RAMP @ 100°F
- 2141 Avg. TEMP. 600°F
- 2142 START FURNACE COOL DOWN
- 2231 STOPPED AFTERBURNER
- 2132 STOPPED DATALOGGER

TEST#17A  
8 MARCH 90

- 1052 Started Logger
- 1056 Lit Afterburner
- 1111 Lit Furnace
- 1119 Started Ramp (300°/hr) at 100°
- 1244 Avg material Temp 600°, begin soak
- 1445 COMPLETED 2HR SOAK START COOL DOWN
- 1540 STOPPED AFTERBURNER
- 1544 STOPPED DATALOGGER

TEST 17B

- 1930 START DATALOGGER
- 1931 START AFTERBURNER
- 1947 START CHART RECORDER
- 1949 LIT FURNACE
- 1953 FURNACE TEMP. 100°F, START 300°F/hr  
RAMP
- 2120 FURNACE AVG. TEMP. 600°F, START 1hr  
SOAK CYCLE
- 2220 1hr SOAK COMPLETE, START FURNACE  
COOL DOWN
- 2240 STOPPED AFTERBURNER  
~~STOPPED~~

# TEST 17C

11 MAR. 96

0827 START DATALOGGER + AFTERBURNER  
0846 START CHART RECORDER  
0850 LIT FURNACE  
0904 START 300°F/hr RAMP  
1028 MATERIAL AVG. TEMP. 602°F, START  
2hr. SOAK CYCLE  
1228 2hr. SOAK CYCLE COMPLETE, START FURNACE  
COOLDOWN  
FURNACE TEMP 195°F, STOP AFTERBURNER  
STOP DATALOGGER

## TEST 18 HOT DECON

1454 Lit Afterburner  
1513 Lit Furnace  
1514 Start Ramp (550°/hr) at 100°  
1621 ALL FURNACE TEMP. READINGS ABOVE 600°F  
START 2hr SOAK CYCLE  
1821 2hr SOAK CYCLE COMPLETE, START FURNACE  
COOLDOWN



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**APPENDIX F**

**HOURLY DATALOGS FOR FURNACE RUNS 1-18**

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# Pre - START-UP (1 of 3)

Date: 1-31-96 B.T.  
Time: 1026 A.T.

Test Number: #1 B.T.

Ramp-Up Time: 50°F/Hr

Soak Time: 12 Hrs

Soak Temp: 580°F

## MECHANICAL

Initial each item.

☒ Inspection doors/manways are SECURED

☒ Gas Valves OPEN

☒ View/Inspection Ports CLOSED

\* Record Gas (Propane) Value 85%

Verify all valves, doors, inspection ports, manway, etc. have been returned to a position capable of sustaining system operations.

## ELECTRICAL

Initialize each item.

☒ All Lockout/Tagouts (1-5) are ACCOUNTED for.

☒ Furnace and Afterburner Control Breakers are ON.

☒ Verify Emergency Stop Pushbuttons are NOT ENGAGED

☒ BUMP Motors and switch to AUTO

☒ Furnace Combustion Blower (M-220)

☒ Afterburner Combustion Blower (M-130)

☒ Afterburner I.D Fan (M-158)

\* Place Afterburner Switch in Auto Position

☐ Calibrate CEM

Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations.

Interconnecting Duct NOX

Interconnecting Duct THC

Stack's NOX

Stack's SO2

Stack's THC

Stack's CO

Stack's O2

Stack's CO

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |

\*\* Verify that all regulators on Calibration Gas Tanks are CLOSED

☒ Datalogger/Computer is ON

13:42 Record Time (Computer Clock)

36°F Record Ambient Air Temperature (TIT-300)

91% Ambient Humidity (call weather service @ 205-666-3010)

013:08 record every 6 hours on data log sheet

945-7060 AMS Hack

complete

\* Lock-out All Motors; Exclusion Log  
\* Spiking

Secure Equipment Pad and Access Road w/ chairs

# LOADING/UNLOADING (2 of 3)

Date: 1-31-96 N.T.  
Time: 1026 N.T.

Test Number: H / N.T.  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

## FIELD ACTIVITIES

Initial each item.



Load Furnace with Materials and Thermocouples  
Cinder Blocks

# A Rack A's Characteristics. = 632 lbs.

For each rack/bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

| Initial Wt.(lbs) | Final Wt.(lbs) | Test Materials | Initial Wt.(lbs) | Final Wt.(lbs) |
|------------------|----------------|----------------|------------------|----------------|
| —                | —              | Cinder SD      | —                | —              |
| 1162 #           | —              | SD SD          | —                | —              |

Verify pipe is checked with wooden chocks prior to loading to prevent pipes from rolling into each other.

Take Pictures

Unable to photograph camera malfunction - CFP

B Rack B's Characteristics. Steel pipe + clay pipe  
= 483 lbs

| Initial Wt.(lbs) | Final Wt.(lbs) | Test Materials                 | Initial Wt.(lbs) | Final Wt.(lbs) |
|------------------|----------------|--------------------------------|------------------|----------------|
| 491              | —              | SP SP                          | —                | —              |
| 184 lbs          | —              | SC SC                          | —                | —              |
| Included         | —              | Clean Pipe Clean Pipe<br>SP SP | —                | —              |

Take Pictures

See Note about cage

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks

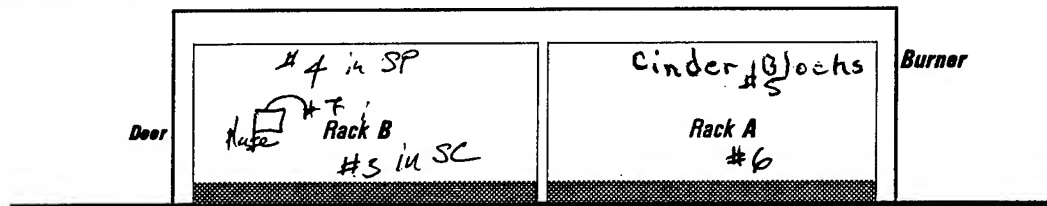
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris

Total Weight of the two racks must be less than 3,000 Lbs.

\*\* No more than 1-lb of total explosives will be loaded into the furnace during any one batch/load.



Mark Locations of Thermocouples



Roll Calls and Close Furnace Door (Signatures required)

*[Signature]*

Verify all site personnel are accounted.  
Have each person initialized this checklist.  
Close and secure furnace door.



Secure Equipment Pad and Access Road with Chain Links

\*Complete Spike Sample  
weigh sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

**START-UP (3 of 3)**

Date: 31 JAN 96

Time: 14:17

Test Number: 1

Ramp-Up Time: 50°/Hr

Soak Time: 12 Hours

Soak Temp: 500°

**AFTERBURNER START-UP**

Initial and record time for each item.

☒ Start "I.D. Fan". Adjust fan speed to maintain a system draft < -0.5 In. WC☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

☒ Start "DATALOGGER" Pushbuttons on the Computer.☒ Heat-Up Burner to 1800 Deg. F. Adjust I.D. Fan speed to maintain < -0.5 In. WC

@ 600 F: :Time

@ 1200 F: :Time

@ 1800 F: :Time

Once the burner is operating at low fire, the control will be released to the operator. The operator must adjust gas flow and I.D. fan speed to maintain temperature and system draft @ < -0.5 In. WC.

**FURNACE START-UP**

Initial and record time for each item.

☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC☒ Verify for "INTERLOCK OK" Light is energized. Turn Furnace Key to "BURNER" Position.

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner in low fire.

☒ Ramp-Up Furnace Temperature to SOAK Temperature. Maintain Ramp-Up Rate. Adjust ID Fan ... and Temperature  
\*\* Record furnace temperatures during ramp-up on hourly datalog sheet

Once the burner is operating at low fire, the burner control will be released to the operator. The operator must adjust ID fan speed to maintain < -0.5 In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature

☒ Manually Log Operating Parameters.

Use the attached "WARM UP, SOAK, and COOL-DOWN" log sheet to record all operating parameters at 30 Minutes intervals. SOAK times and temperatures may vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS****COOL-DOWN**

Initialize and record time for each item.

☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.☒ STOP "OXIDIZER" and "AIR BLOWER"☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

# LABORATORY DATA LOG

Date: 31 JAN 90  
Time: \_\_\_\_\_

Test Number: T-1  
Ramp-Up Rate: 50/hr  
Soak Time: 12 Hours  
Soak Temp: 500 °F

Missed 10:00 AM Reading

| Tag | Description | Unit |  | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 | 0 | 100 | 200 | 300 | 4 |
|-----|-------------|------|--|------|------|------|------|------|------|------|------|------|------|------|---|-----|-----|-----|---|
|-----|-------------|------|--|------|------|------|------|------|------|------|------|------|------|------|---|-----|-----|-----|---|

Time:

## FURNACE

|           |                                 |        |  |      |       |       |       |       |       |       |       |       |       |      |      |       |       |       |       |      |
|-----------|---------------------------------|--------|--|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|------|
| MIT-202   | Fuel Gas Pressure               | In. WC |  |      | 1.16  | 1.14  | 1.10  | 1.12  | 1.06  | 1.09  | 1.24  | 1.27  | 1.33  | 1.43 | 1.45 | 1.41  | 1.26  | 1.05  | 1.38  | 1.43 |
| MIT-201   | Fuel Gas Flow                   | CFH    |  | Actg | 200   | 200   | 201   | 183   | 200   | 175   | 173   | 170   | 169   |      |      | 167   | 167   | 168   | 168   | 1    |
| MIT-222   | Combustion Air Pressure         | In. WC |  |      | 23.75 | 23.64 | 23.78 | 24.69 | 23.84 | 25.04 | 25.27 | 25.46 | 25.45 |      |      | 25.49 | 25.42 | 25.36 | 25.37 | 2    |
| MIT-221   | Combustion Air Flow             | CFH    |  |      | 731   | 723   | 734   | 1516  | 742   | 1845  | 1952  | 2123  | 2164  |      |      | 2195  | 2192  | 2142  | 2155  | 2    |
| MIT-108   | Chamber Pressure                | In. WC |  |      | -.32  | -.32  | -.31  | -.29  | -.31  | -.33  | -.32  | -.30  | -.29  |      |      | -.29  | -.34  | -.48  | -.48  | 1    |
| TIT-201   | Recorder Temperature            | Deg. F |  |      | 38    | 38    | 37    | 122   | 105   | 223   | 268   | 373   | 422   |      |      | 473   | 524   | 550   | 544   | 5    |
| ✓ TIT-202 | Furnace Exit Gas Temp (Control) | Deg. F |  |      | 37    | 38    | 37    | 124   | 102   | 225   | 271   | 376   | 426   |      |      | 477   | 527   | 546   | 545   | 5    |
| TIT-203   | Material Thermocouple #1        | Deg. F |  |      | 37    | 39    | 37    | 87    | 136   | 185   | 225   | 318   | 368   |      |      | 413   | 479   | 518   | 516   | 5    |
| TIT-204   | Material Thermocouple #2        | Deg. F |  |      | 35    | 35    | 35    | 85    | 84    | 158   | 195   | 277   | 316   |      |      | 358   | 407   | 454   | 466   | 4    |
| TIT-205   | Material Thermocouple #3        | Deg. F |  |      | 37    | 37    | 36    | 97    | 91    | 168   | 218   | 309   | 350   |      |      | 398   | 453   | 494   | 504   | 5    |
| TIT-206   | Material Thermocouple #4        | Deg. F |  |      | 38    | 37    | 37    | 97    | 137   | 203   | 251   | 350   | 401   |      |      | 450   | 498   | 529   | 527   | 5    |
| MIT-207   | Material Thermocouple #5        | Deg. F |  |      | 38    | 37    | 37    | 110   | 95    | 201   | 245   | 347   | 396   |      |      | 442   | 504   | 530   | 527   | 5    |
|           |                                 | AVG    |  |      |       |       |       |       |       |       |       |       |       |      |      |       |       | 504   | 507   | 5    |

## AFTERBURNER

|           |                                  |        |  |  |      |      |      |      |      |      |      |      |      |      |  |      |      |      |      |   |
|-----------|----------------------------------|--------|--|--|------|------|------|------|------|------|------|------|------|------|--|------|------|------|------|---|
| ✓ TIT-101 | Combustor Burner Temp. Control   | Deg. F |  |  | 1400 | 1753 | 1777 | 1782 | 1834 | 1817 | 1808 | 1812 | 1809 | 1815 |  | 1820 | 1807 | 1819 | 1797 | 1 |
| MIT-108   | Furnace Flow                     | CFH    |  |  | 2353 | 53   | 2358 | 2230 | 2296 | 420  | —    | 404  | 398  |      |  | 407  | —    | —    | —    | — |
| MIT-101   | Furnace Pressure (Furnace Draft) | In. WC |  |  | .55  | .53  | .53  | .53  | 0.60 | 0.60 | 0.64 | 0.67 | 0.67 | 0.70 |  | 0.73 | 0.43 | .38  | .39  | 2 |
| TIT-105   | Combustor Temperature            | Deg. F |  |  | 1457 | 1746 | 1814 | 1815 | 1838 | 1817 | 1813 | 1815 | 1818 | 1803 |  | 1818 | 1812 | 1807 | 1800 | 1 |
| MIT-103   | Fuel Pressure                    | PSIG   |  |  | .84  | .84  | .80  | .81  | 0.77 | .84  | 0.68 | 0.66 | 0.56 | 0.60 |  | 0.40 | 0.13 | .11  | .16  | 1 |
| TIT-121   | Fuel Gas Flow                    | CFH    |  |  | 1103 | 1102 | 1073 | 1070 | 1037 | 1101 | 946  | 918  | 855  | 872  |  | 750  | 590  | 596  | 606  | 5 |

## CEM

|                 |                          |        |  |  |      |       |       |       |       |       |       |       |       |  |  |       |       |      |       |    |
|-----------------|--------------------------|--------|--|--|------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|-------|-------|------|-------|----|
| NOx-8           | Interconnecting Duct NOx | ppm    |  |  | 0.0  | 0.0   | 107.9 | 0.4   | 0.7   | 0.8   | 0.9   | 0.9   | 0.9   |  |  | 0.7   | 0.8   | .9   | 1.0   | 1  |
| THC-8           | Interconnecting Duct THC | ppm    |  |  | 10.0 | -.4   | -2.0  | 26.6  | 1.1   | 16.9  | 15.4  | 11.4  | 8.1   |  |  | 8.0   | 10.3  | 11.4 | 8.2   | 1  |
| CO              | Stack's CO               | ppm    |  |  | -.5  | -.5   | 0     | 0     | -0.5  | 0.5   | -0.5  | -0.5  | -0.5  |  |  | -0.5  | -0.5  | -.5  | -.5   | 1  |
| THC             | Stack's THC              | ppm    |  |  | .6   | .3    | 0     | 0.7   | 0.7   | 0.8   | 1.0   | 0.7   | 0.6   |  |  | 0.5   | 0.6   | .8   | 1.0   | 1  |
| NOx             | Stack's NOx              | ppm    |  |  | 0.0  | 0.0   | 201.5 | 41.6  | 44.8  | 41.4  | 40.4  | 5.5   | 46.6  |  |  | 46.0  | 48.6  | 52.7 | 56.2  | 6  |
| SO2             | Stack's SO2              | ppm    |  |  | -2.0 | 7.5   | 401   | 0     | -2.0  | -1.5  | -1.5  | -1.0  | -1.5  |  |  | -2.5  | -2.5  | -2.0 | -1.0  | 1  |
| O2              | Stack's O2               | %      |  |  | 12.6 | 10.28 | .05   | 12.35 | 12.05 | 12.22 | 12.27 | 11.88 | 11.70 |  |  | 12.13 | 11.63 | 11.4 | 11.32 | 12 |
| CO2             | Stack's CO2              | %      |  |  | .10  | .10   | 0     | 5.66  | 5.78  | 5.60  | 5.62  | 5.54  | 5.94  |  |  | 5.70  | 5.98  | 5.72 | 6.16  | 5  |
| TIT-300         | Ambient Temp             | Deg. F |  |  | 54   | 35    | 34    | 32    | 32    | 32    | 32    | 32    | 35    |  |  | 32    | 32    | 32   | 32    | 3  |
| Weather Service | Relative Humidity        |        |  |  | 81%  |       |       |       |       |       |       |       | 84    |  |  | —     |       |      |       |    |



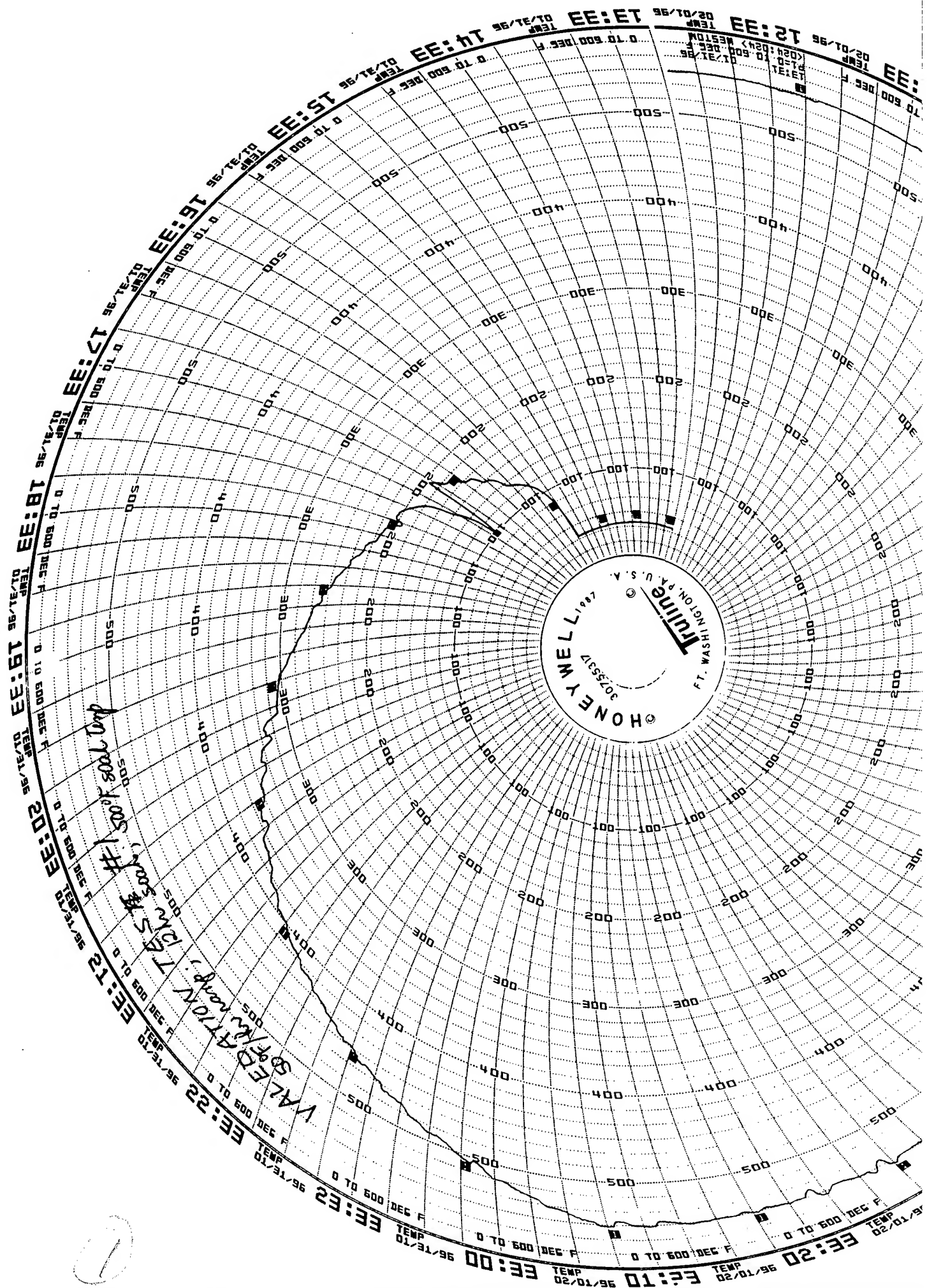
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|    |      |      |       |
|----|------|------|-------|
| 73 | 3451 | -20  | -219  |
| 8  | 168  | 20   | 202   |
| 00 | 2501 | 2342 | 2325  |
| 88 | 2015 | 688  | 561   |
| 6  | -45  | -51  | -1.00 |
| 9  | 549  | 231  | 101   |
| 52 | 552  | 230  | 99    |
| 2  | 521  | 336  | 125   |
| 0  | 492  | 323  | 211   |
| 6  | 517  | 295  | 163   |
| 31 | 530  | 299  | 119   |
| 34 | 535  | 225  | 99    |
| 8  | 519  | 136  |       |

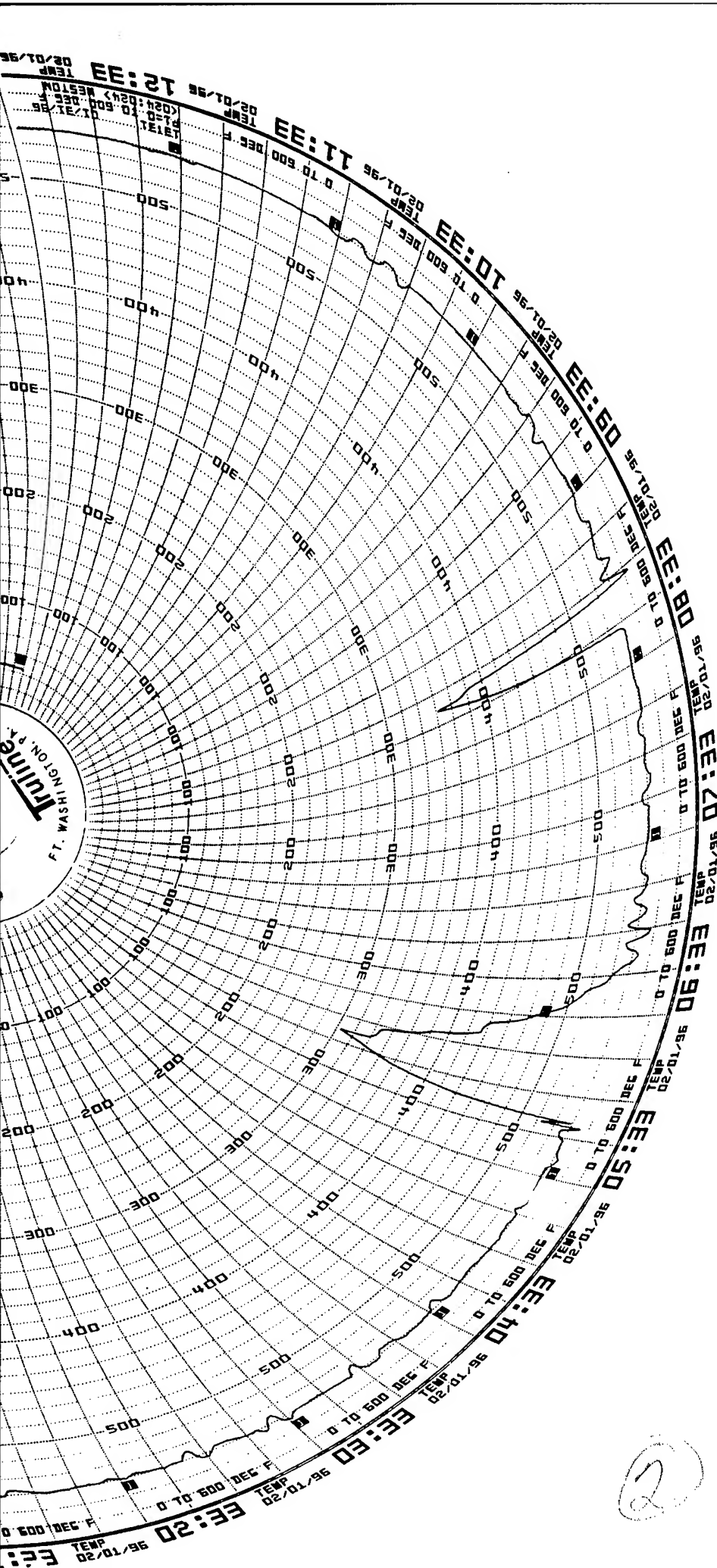
|    |      |      |      |
|----|------|------|------|
| 89 | 1861 | 1752 | 243  |
| -  | -    | -    | -    |
| 60 | 36   | 1,37 | 2.44 |
| 09 | 820  | 1757 | 208  |
| 7  | .07  | .85  | .01  |
| 62 | 461  | 1097 | 1    |

|   |       |       |       |
|---|-------|-------|-------|
| 8 | .8    | .6    | .6    |
| 2 | -2.3  | -1.6  | 1.4   |
| 5 | -.5   | -.5   | .5    |
| 8 | .8    | 1.0   | .4    |
| 7 | 47.7  | 39.3  | -1.0  |
| 0 | -3.5  | -5.6  | -6.5  |
| 9 | 12.52 | 13.82 | 21.30 |
| 2 | 5.22  | 4.82  | 1.02  |
| 8 | 38    |       | 37    |

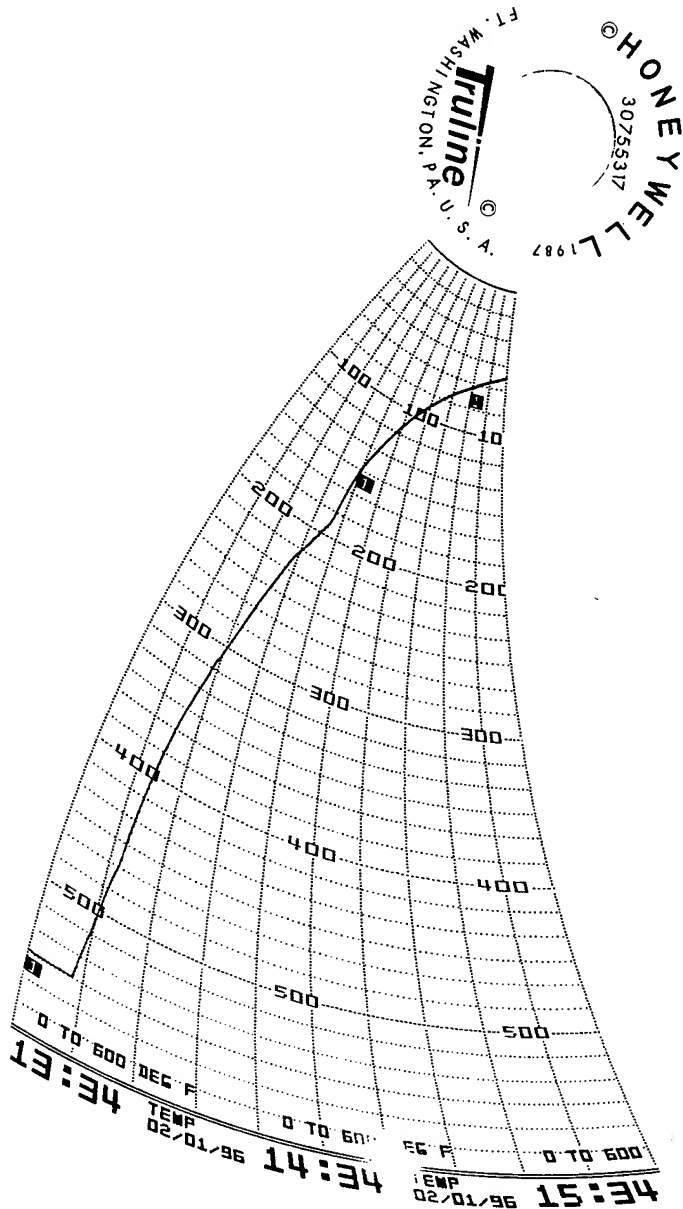
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TO 600 02-01-96  
WESTON



NOx Cal Sheet  
Post Test #1 - Pre Test #2  
2/1/96

**Pre - START-UP (1 of 3)**

Date: Feb 2 1996  
Time: Started 11:00 am  
afterburner

Test Number: 2  
Ramp-Up Time: 50°F/hr after 200°F  
Soak Time: 6 hrs  
Soak Temp: 400°F

**MECHANICAL**

*Initial each item.*

- ☒ Inspection doors/manways are SECURED  
☒ Gas Valves OPEN  
☒ View/Inspection Ports CLOSED

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

**ELECTRICAL**

*Initialize each item.*

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED for.  
☐ Furnace and Afterburner Control Breakers are ON.  
☒ Verify Emergency Stop Pushbuttons are NOT ENGAGED  
☐ BUMP Motors and switch to AUTO

         Furnace Combustion Blower (M-220)  
         Afterburner Combustion Blower (M-130)  
         Afterburner I.D Fan (M-158)

Verify field selector switches are in "AUTO" after  
all motor have been "BUMPED" to verify operations.

☒ Calibrate CEM

         Interconnecting Duct NOX  
         Interconnecting Duct THC  
         Stack's NOX  
         Stack's SO2  
         Stack's THC  
         Stack's CO  
         Stack's O2  
         Stack's CO

Tank      Recorded  
Values    Values    Adjustment (Y/N)

|       |      |   |
|-------|------|---|
| 204.1 | 204  | Y |
| 60.8  | 60   | Y |
| 204.1 | 204  | Y |
| 399.9 | 399  | N |
| 60.8  | 60   | Y |
| 400.5 | 399  | N |
| 19    | 19.1 | N |
| 19    | 19.1 | N |

\*\* Verify that all regulators on Calibration Gas Tanks are CLOSED

☒ Datalogger/Computer is ON

1500 Record Time (Computer Clock)  
37 Record Ambient Air Temperature (TIT-300)  
         Ambient Humidity (call weather service @ 205-666-3010)  
         record every 6 hours on data log sheet

# LOADING/UNLOADING (2 of 3)

Date: 2 Feb 96  
Time: \_\_\_\_\_

Test Number 2  
Ramp-Up Rate: 50°F/hr  
Soak Time: 6 hrs  
Soak Temp: 400°F

## FIELD ACTIVITIES

Initial each item.

### ☒ Load Furnace with Materials and Thermocouples

For each rack/bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

Rack A's Characteristics. \* Scale does not work

| Initial Wt. (lbs) | Final Wt. (lbs) | Materials | Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|-----------------|-----------|-------------------|-----------------|
| _____             | _____           |           | _____             | _____           |
| _____             | _____           |           | _____             | _____           |
| _____             | _____           |           | _____             | _____           |

\*\* Secure pipe to prevent pipes from rolling

Take Pictures

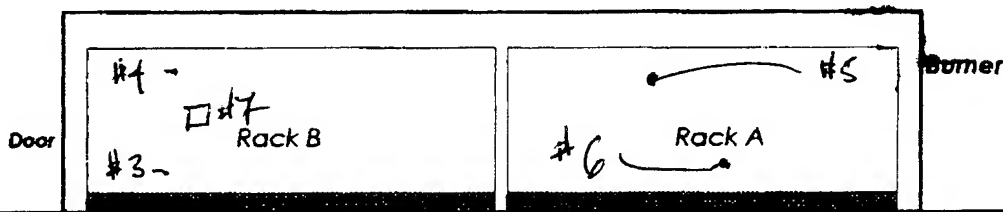
Rack B's Characteristics. \* Scale does not work

| Initial Wt. (lbs) | Final Wt. (lbs) | Materials | Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|-----------------|-----------|-------------------|-----------------|
| _____             | _____           |           | _____             | _____           |
| _____             | _____           |           | _____             | _____           |
| _____             | _____           |           | _____             | _____           |

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☒ Mark Locations of Thermocouples



### ☒ Roll Cans and Close Furnace Door

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

**START-UP (3 of 3)**

Date:

2 Feb 96

Time:

Rmp-Up Time:

50°F per hour

Soak Time:

6 hr

Soak Temp:

400°F

**AFTERBURNER START-UP**

Initial and record time for each item.

☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC*Once the burner has started, the control system will initiate a purge sequence.**The pilot will then attempt to light the burner at low fire.*☒ Start "DATALOGGER" Pushbuttons on the Computer.☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 In. WC

@ 600 F: :Time

@ 1200 F: :Time

@ 1800 F: :Time

*Once the burner is at low fire, burner control will be released to the operator.**The operator must adjust gas flow and ID fan speed to maintain temperature**1800°F and system draft @ < -0.5 In WC.***FURNACE START-UP**

Initial and record time for each item.

☒ Set Bleed Air Damper to 75%☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC☒ Set Controller to "MANUAL". Set controller output to 0.0☒ Turn Furnace Key to "BURNER" Position.☒ Verify "INTERLOCK OK" Light is energized.*Once the burner started, the control system will initiate a purge sequence.**The pilot will then attempt to light the burner at low fire.*☐ Open Bleed Air Valve to 100%☒ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.☒ Record Furnace temperatures during ramp-up hourly, on the control room log sheet.*Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain < -0.5 In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.*☒ Manually Log Operating Parameters.*Use the attached Log Sheet to record all operating parameters at least hourly.**SOAK TIMES and TEMPERATURES will vary from test to test.***\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS****COOL-DOWN**

Initial and record time for each item.

☐ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.☐ STOP "OXIDIZER" and "AIR BLOWER"☐ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

# HOURLY DATA LOG

Date: 2 Feb 9  
Time: \_\_\_\_\_

Test Number: T2  
Ramp-Up Rate: 50°/Hr  
Soak Time: 6 hrs  
Soak Temp: 400°F

| Tag | Description | Unit | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 | 0000 |
|-----|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|-----|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

Time:

## FURNACE

|         |                                 |        |       |       |       |       |       |       |       |       |       |       |       |       |  |
|---------|---------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| PIT-232 | Fuel Gas Pressure               | In. WC | 22.45 | 19.27 | 24.32 | 27.92 | 34.13 | 34.96 | 30.2  | 22.96 | 26.21 | 28.11 | 26.50 | 27.64 |  |
| FIT-231 | Fuel Gas Flow                   | CFH    | 30    | 29    | 31    | 32    | 32    | -2    | -1    | 1     | 4     | 8     | 11    | 12    |  |
| PIT-222 | Combustion Air Pressure         | In. WC | 24.82 | 24.97 | 25.02 | 25.16 | 25.33 | 25.47 | 25.46 | 25.4  | 25.41 | 25.98 | 25.44 | 25.61 |  |
| FIT-221 | Combustion Air Flow             | CFH    | 10822 | 10936 | 10750 | 10670 | 10589 | 10552 | 10645 | 10792 | 10853 | 10798 | 10888 | 10869 |  |
| PIT-158 | Chamber Pressure                | In. WC | -38   | -28   | -35   | -05   | .37   | -.26  | -.46  | -.72  | -.73  | -.73  | -.71  | -.71  |  |
| TIT-201 | Recorder Temperature            | Deg. F | 197   | 246   | 303   | 348   | 405   | 450   | 435   | 434   | 424   | 429   | 429   | 430   |  |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg. F | 200   | 248   | 304   | 350   | 401   | 451   | 438   | 437   | 427   | 432   | 431   | 433   |  |
| TIT-203 | Material Thermocouple #1        | Deg. F | 154   | 223   | 273   | 323   | 366   | 409   | 408   | 413   | 403   | 408   | 406   | 407   |  |
| TIT-204 | Material Thermocouple #2        | Deg. F | 165   | 217   | 269   | 312   | 360   | 404   | 401   | 405   | 398   | 404   | 403   | 405   |  |
| TIT-205 | Material Thermocouple #3        | Deg. F | 117   | 187   | 232   | 272   | 327   | 379   | 397   | 405   | 404   | 405   | 407   | 408   |  |
| TIT-206 | Material Thermocouple #4        | Deg. F | 158   | 228   | 279   | 325   | 372   | 419   | 415   | 417   | 409   | 412   | 411   | 411   |  |
| TIT-207 | Material Thermocouple #5        | Deg. F | 181   | 233   | 289   | 336   | 381   | 433   | 420   | 420   | 408   | 417   | 413   | 416   |  |
| Avg     |                                 |        | 155   | 217   | 268   | 313   | 362   | 408   | 408   | 412   | 404   | 409   | 407   | 409   |  |

## AFTERBURNER

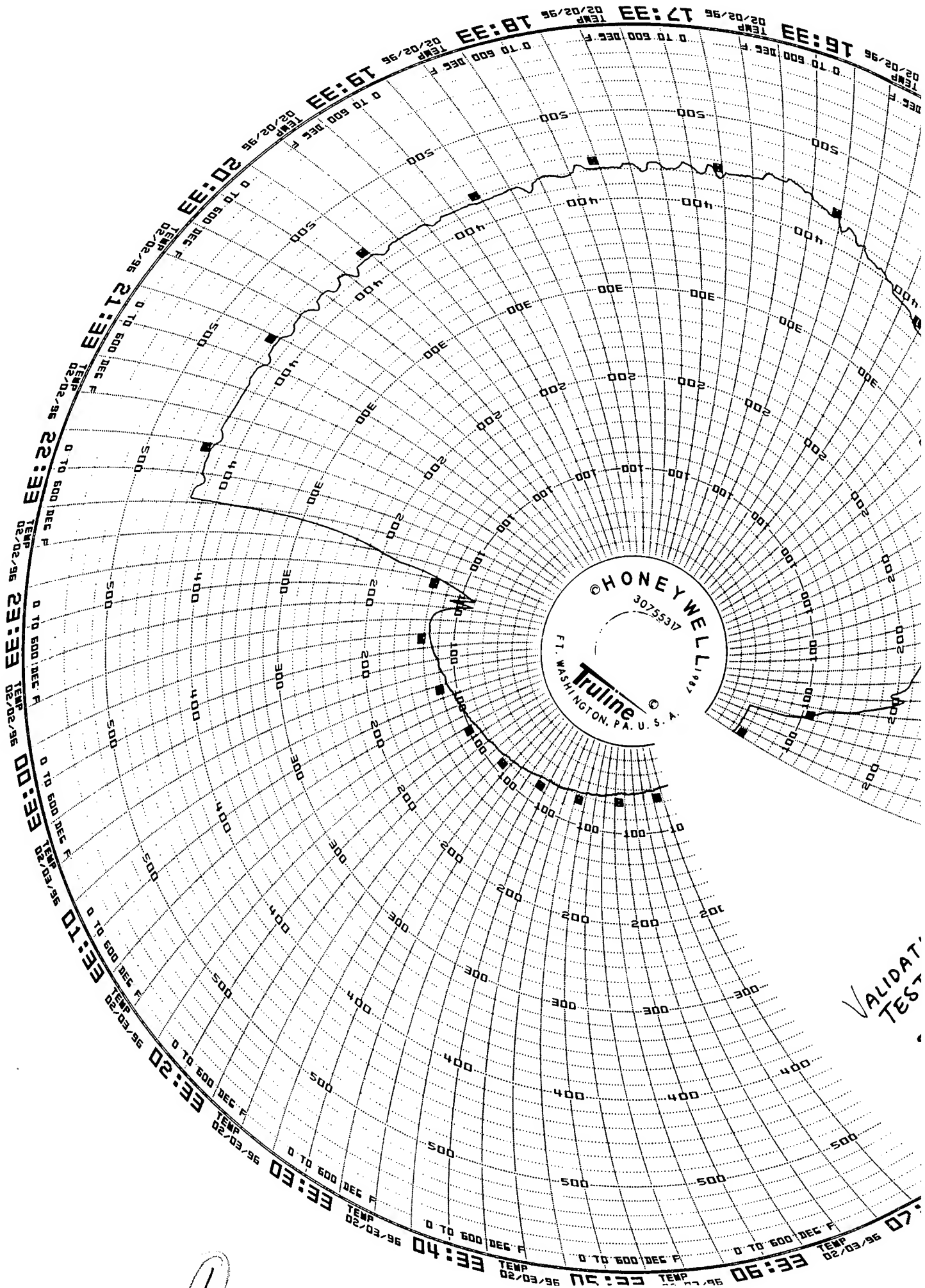
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|---------|--------------------------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| TIT-131 | Combustor Burner Temp. Control | Deg. F  | 1816 | 1804 | 1810 | 1802 | 1798 | 1805 | 1803 | 1805 | 1802 | 1835 | 1926 | 1822 |  |
| FIT-140 | Fumes Flow                     | PPH CFH | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |  |
| PIT-151 | Fumes Pressure (Furnace-Draft) | In. WC  | .51  | .39  | .51  | .40  | .49  | .50  | .37  | .26  | .27  | .29  | .25  | .29  |  |
| TIT-145 | Combustor Temperature          | Deg. F  | 1821 | 1811 | 1818 | 1832 | 1809 | 1812 | 1806 | 1803 | 1822 | 1810 | 1912 | 1809 |  |
| PIT-133 | Fuel Pressure                  | PSIG    | .63  | .50  | .45  | .23  | .42  | .18  | .14  | .14  | .14  | .17  | .16  | .17  |  |
| TIT-121 | Fuel Gas Flow                  | CFH     | 909  | 811  | 769  | 651  | 767  | 636  | 605  | 605  | 601  | 645  | 610  | 456  |  |

## GEM

|                 |                          |        |      |      |       |       |      |       |       |       |      |       |       |       |  |
|-----------------|--------------------------|--------|------|------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|--|
| NOx-B           | Interconnecting Duct NOx | ppm    | 1.3  | 1.5  | 1.8   | 2.0   | 2.5  | 2.8   | 1.8   | 1.3   | 1.0  | 1.3   | 1.1   | 1.2   |  |
| THC-B           | Interconnecting Duct THC | ppm    | 66.4 | 77.3 | 60.2  | 50.8  | 41.8 | 38.8  | 45.0  | 53.0  | 58.8 | 60.4  | 56.3  | 60.8  |  |
| CO              | Stack's CO               | ppm    | 7.5  | 7.5  | 7.5   | 7.5   | 7.5  | 7.5   | 7.5   | 7.5   | 7.5  | 7.5   | 7.5   | 7.5   |  |
| THC             | Stack's THC              | ppm    | 2.3  | 2.3  | 2.2   | 1.8   | 1.4  | .6    | .1    | .3    | .3   | .8    | .1    | .7    |  |
| NOx             | Stack's NOx              | ppm    | 47.9 | 53.6 | 53.8  | 51.8  | 63.3 | 59.9  | 61.1  | 64.6  | 72.6 | 72.5  | 72.6  | 58.3  |  |
| SO2             | Stack SO2                | ppm    | 4.5  | 5.0  | 4.5   | 4.0   | 3.5  | 2.5   | 1.0   | .5    | 1.0  | 2.5   | 2.5   | 2.5   |  |
| O2              | Stack's O2               | %      | 11.5 | 11.8 | 11.77 | 12.15 | 11.7 | 11.75 | 11.73 | 12.07 | 11.8 | 10.65 | 10.92 | 13.22 |  |
| CO2             | Stack's CO2              | %      | 5.9  | 5.68 | 5.74  | 5.58  | 5.82 | 5.90  | 5.98  | 5.58  | 5.46 | 6.60  | 6.66  | 6.18  |  |
| TIT-300         | Ambient Temp             | Deg. F | 37   | 36   | 36    | 34    | 33   | 33    | 22.7  |       | 25.7 | 24.9  | 25.3  |       |  |
| Weather Service | Relative Humidity        |        |      |      |       |       | 99.9 |       | 99.9  |       | 91.9 | 92.3  | 89.9  |       |  |

①

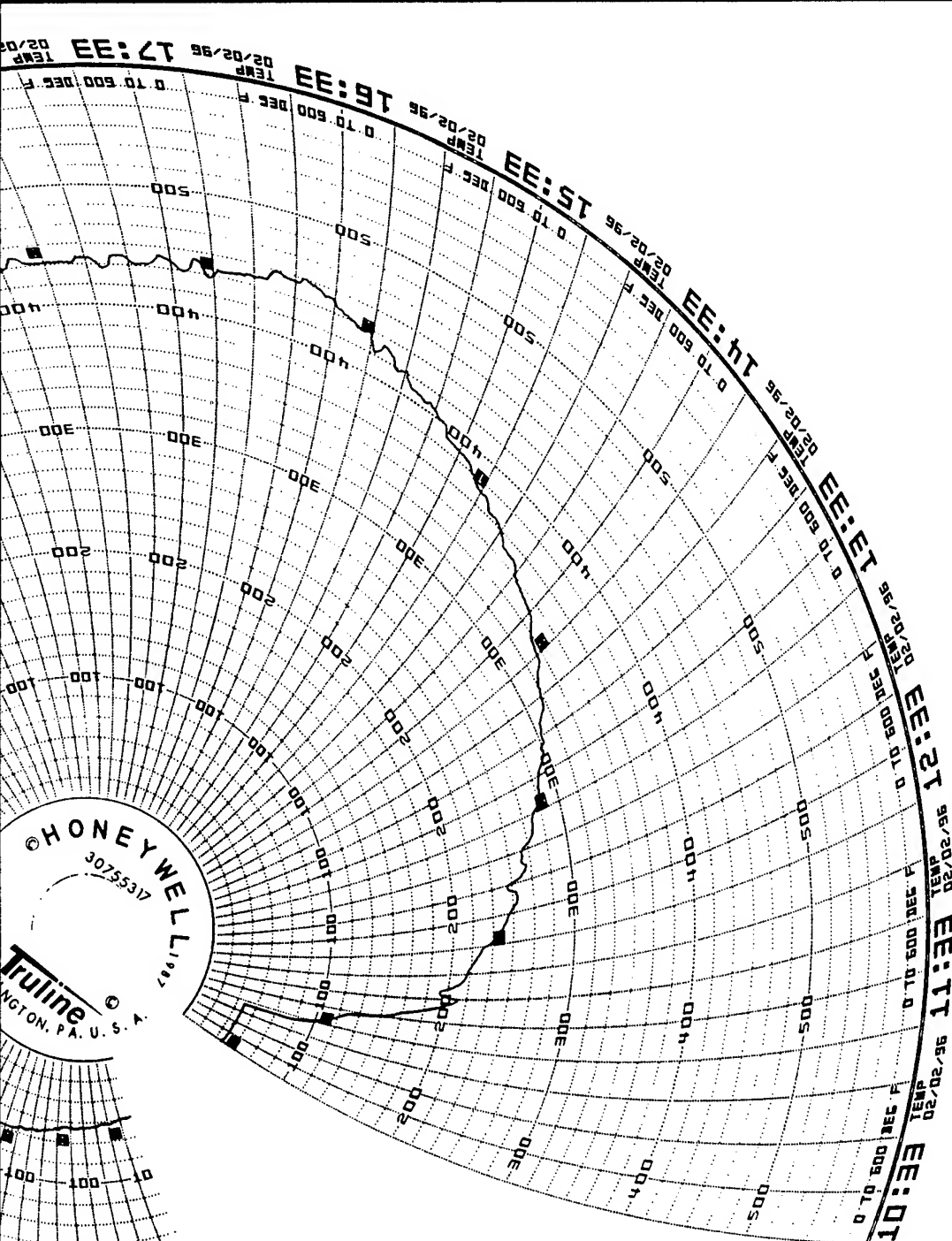
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VALIDATION  
TEST

1





VALIDATION  
TEST #2  
50°F/hr ramp  
400°F soak temp.  
6 hr soak time

06:33 02/03/96 07:33  
TEMP 02/03/96

# Pre - START-UP (1 of 3)

Date: 4 Feb 96  
Time: \_\_\_\_\_

Test Number: T 3  
Ramp-Up Rate: 50°/HR  
Soak Time: 4 Hrs  
Soak Temp: 500°

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

80%

## ELECTRICAL

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

- ☒ Furnace Combustion Blower (M-220)
- ☒ Afterburner Combustion Blower (M-130)
- ☒ Afterburner I.D Fan (M-158)
- ☒ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

## Calibrate CEM

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx
- ☒ Stack SO2
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O2
- ☒ Stack CO

Tank Recorded Adjustment (Y/N)  
Values Values

|       |     |   |
|-------|-----|---|
| 204.1 | 204 | ✓ |
| 91.5  | 90  | Y |
| 204.1 | 203 | ✓ |
| 399.1 | 400 | Y |
| 91.5  | 90  | Y |
| 437.4 | 437 | Y |
| 21.8  | 22  |   |
| 437.4 | 440 | Y |

See attached  
sheets.

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

## Datalogger/Computer is ON

- ☒ Record Time (Computer Clock)
- ☒ Record Ambient Temperature (TIT-300)
- ☒ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

## Pre - Spike Activities

- Lock-out all Motors; Complete Exclusion Log
- Secure Equipment Pad and Access Road w/ Chains
- Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Date: Feb 4 96  
Time: \_\_\_\_\_

Test Number T3  
Ramp-Up Rate: 50°/Hr  
Soak Time: 4 Hrs  
Soak Temp: 500°

## FIELD ACTIVITIES

Initial each item.

### ☒ Load Furnace with Materials and Thermocouples

For each rack-bin, provide a description in terms of contents, appearance, moisture, etc.

\*\* Refer to loading procedures for instructions.

Rack A's Characteristics.

Initial Wt.(lbs) Final Wt.(lbs)

SCALE NOT WORKING

RACK #1

Materials

#4

Initial Wt.(lbs)

Final Wt.(lbs)

SPKES

#5

\*\* Secure pipe to prevent pipes from rolling

Take Pictures

Rack B's Characteristics.

Initial Wt.(lbs) Final Wt.(lbs)

SCALE NOT WORKING

Materials

#6

Initial Wt.(lbs)

Final Wt.(lbs)

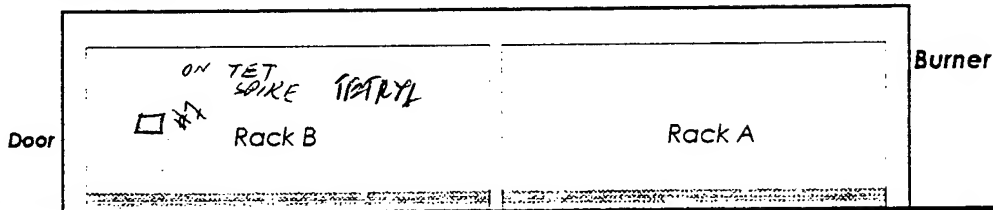
#3  
RDX  
SPIKE

TNT SPIKE

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☒ Mark Locations of Thermocouples



### ☒ Roll Calls and Close Furnace Door

Kevin Klonek  
V.D. H.  
Matthew Muller

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: 4 Feb 96  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: 4 Hrs  
Soak Temp: 500°

## AFTERBURNER START-UP

Initial and record time for each item.



Start "I.D. FAN". Adjust fan speed to maintain a system draft &lt; -0.5 In. WC



Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain &lt; -0.5 In. WC



Start "OXIDIZER" (Burner). Adjust fan speed to maintain &lt; -0.5 In. WC

---

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.



Start "DATALOGGER" Pushbuttons on the Computer.



Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain &lt; -0.5 In. WC

@ 600 F: \_\_\_\_\_ :Time

@ 1200 F: \_\_\_\_\_ :Time

@ 1800 F: \_\_\_\_\_ :Time

---

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature 1800°F and system draft @ < -0.5 In WC.

## FURNACE START-UP

Initial and record time for each item.

Set Bleed Air Damper to ~~75%~~ 60% due to cold air

Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain &lt; -0.5 In. WC



Set Controller to "MANUAL". Set controller output to 0.0



Turn Furnace Key to "BURNER" Position.



Verify "INTERLOCK OK" Light is energized.

---

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

Open Bleed Air Valve to ~~100%~~ Left at 60%

Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

---

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain < -0.5 In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.



Manually Log Operating Parameters.

---

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

## COOL-DOWN

Initial and record time for each item.



Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.



STOP "OXIDIZER" and "AIR BLOWER"



STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

# HOURLY DATA LOG

Date: 04 FEB. 96

Time:

Test Number: T3

Ramp-Up Rate: 50°/HR

Soak Time: 4 Hrs

Soak Temp: 500°

| Tag | Description | Unit |  |  | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 |
|-----|-------------|------|--|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|-----|-------------|------|--|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

Time:

## FURNACE

|         |                                 |        |  |  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---------|---------------------------------|--------|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| PIT-232 | Fuel Gas Pressure               | In. WC |  |  | 14.93 | 22.93 | 18.66 | 24.46 | 19.68 | 22.82 | 24.27 | 27.73 | 32.69 | 36.91 | 37.34 | 33.00 | 32.99 | 30.95 |
| FIT-231 | Fuel Gas Flow                   | CFH    |  |  | 31    | 23    | 30    | 29    | 29    | 30    | 31    | 32    | 33    | 34    | 34    | 33    | 33    | 33    |
| PIT-222 | Combustion Air Pressure         | In. WC |  |  | 26.93 | 27.20 | 26.95 | 26.86 | 26.60 | 26.68 | 26.74 | 26.91 | 27.01 | 27.29 | 27.16 | 27.15 | 27.18 | 27.25 |
| FIT-221 | Combustion Air Flow             | CFH    |  |  | 11095 | 10642 | 10866 | 10703 | 10766 | 10578 | 10534 | 10388 | 10325 | 10223 | 10263 | 10373 | 10391 | 10478 |
| PIT-158 | Chamber Pressure                | In. WC |  |  | -0.61 | -0.47 | -0.47 | -0.46 | -0.46 | -0.42 | -0.39 | -0.38 | -0.34 | -0.31 | -0.31 | -0.55 | -0.54 | -0.63 |
| TIT-201 | Recorder Temperature            | Deg. F |  |  | 136   | 255   | 250   | 254   | 253   | 299   | 345   | 397   | 444   | 495   | 546   | 539   | 537   | 535   |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg. F |  |  | 137   | 256   | 251   | 256   | 255   | 301   | 344   | 401   | 449   | 500   | 551   | 543   | 542   | 540   |
| TIT-203 | Material Thermocouple #1        | Deg. F |  |  | 106   | 227   | 227   | 229   | 229   | 278   | 323   | 377   | 428   | 492   | 542   | 536   | 535   | 535   |
| TIT-204 | Material Thermocouple #2        | Deg. F |  |  | 103   | 202   | 221   | 230   | 232   | 264   | 306   | 353   | 397   | 445   | 498   | 506   | 508   | 508   |
| TIT-205 | Material Thermocouple #3        | Deg. F |  |  | 70    | 148   | 171   | 185   | 198   | 219   | 254   | 290   | 327   | 372   | 424   | 448   | 462   | 471   |
| TIT-206 | Material Thermocouple #4        | Deg. F |  |  | 101   | 213   | 219   | 219   | 221   | 261   | 304   | 354   | 398   | 448   | 507   | 505   | 506   | 511   |
| FIT-207 | Material Thermocouple #5        | Deg. F |  |  | 127   | 250   | 240   | 248   | 243   | 296   | 343   | 396   | 446   | 501   | 554   | 543   | 543   | 540   |
| AVG.    |                                 |        |  |  |       |       |       |       |       |       |       |       |       |       | 450   | 505   | 507   | 510   |
|         |                                 |        |  |  |       |       |       |       |       |       |       |       |       |       |       | 513   |       |       |

## AFTERBURNER

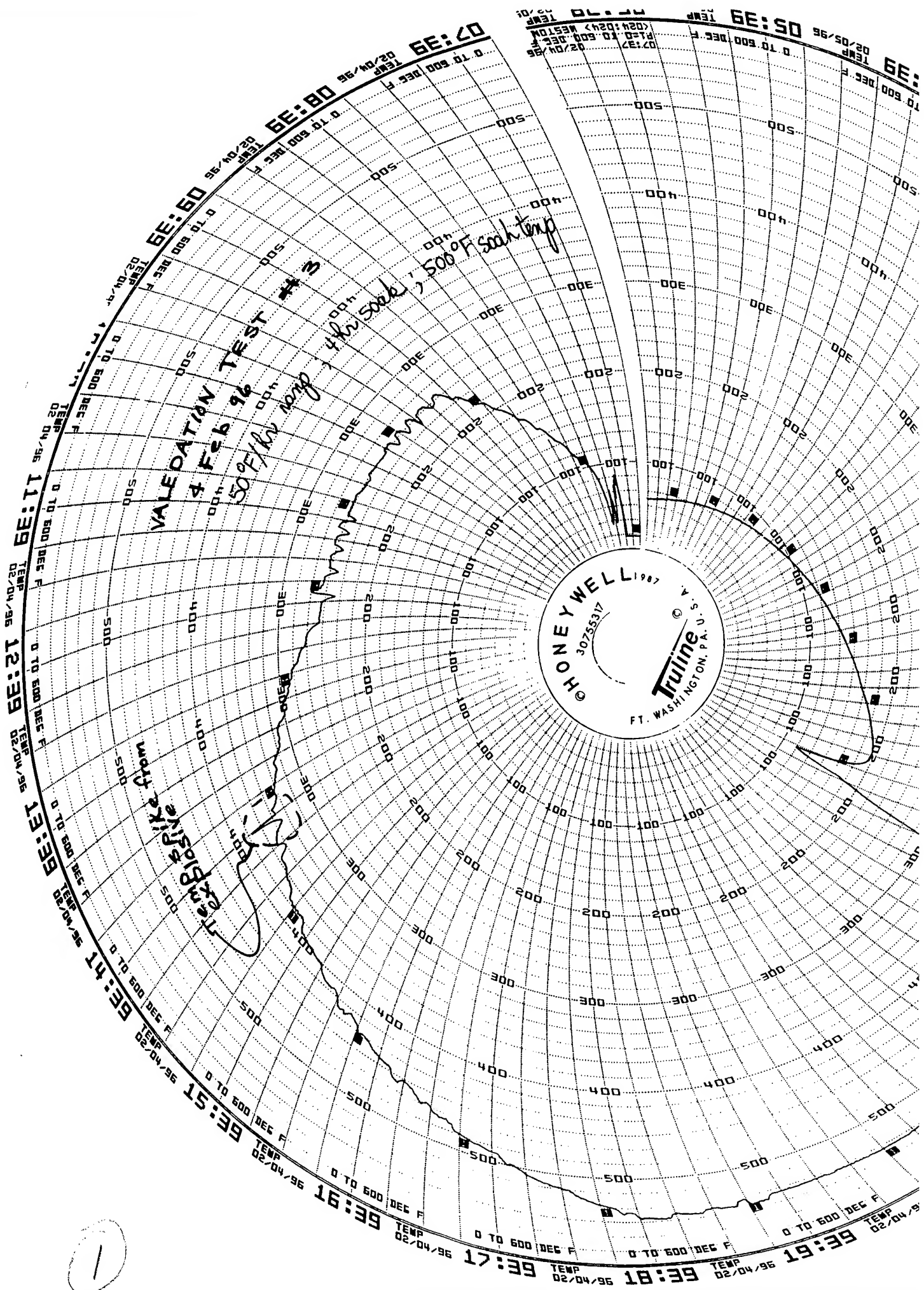
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|---------|--------------------------------|--------|--|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| TIT-131 | Combustor Burner Temp. Control | Deg. F |  |  | 1811 | 1814 | 1827 | 1825 | 1807 | 1811 | 1806 | 1815 | 1816 | 1797 | 1838 | 1784 | 1785 | 1822 |
| FIT-140 | Fume Flow                      | PPH    |  |  | 597  |      |      |      |      |      |      |      |      |      |      |      |      |      |
| PIT-151 | Fume Pressure (Furnace Draft)  | In. WC |  |  | 0.47 | 0.43 | 0.45 | 0.46 | 0.43 | 0.37 | 0.39 | 0.39 | 0.36 | 0.34 | 0.28 | 0.24 | 0.25 | 0.20 |
| TIT-145 | Combustor Temperature          | Deg. F |  |  | 1816 | 1807 | 1812 | 1811 | 1811 | 1817 | 1814 | 1821 | 1827 | 1818 | 1846 | 1792 | 1793 | 1830 |
| PIT-133 | Fuel Pressure                  | PSIG   |  |  | 0.72 | 0.46 | 0.51 | 0.51 | 0.50 | 0.29 | 0.22 | 0.15 | 0.10 | 0.15 | 0.09 | 0.08 | 0.08 | 0.08 |
| TIT-121 | Fuel Gas Flow                  | CFH    |  |  | 947  | 805  | 872  | 820  | 778  | 709  | 664  | 615  | 521  | 551  | 502  | 458  | 458  | 457  |

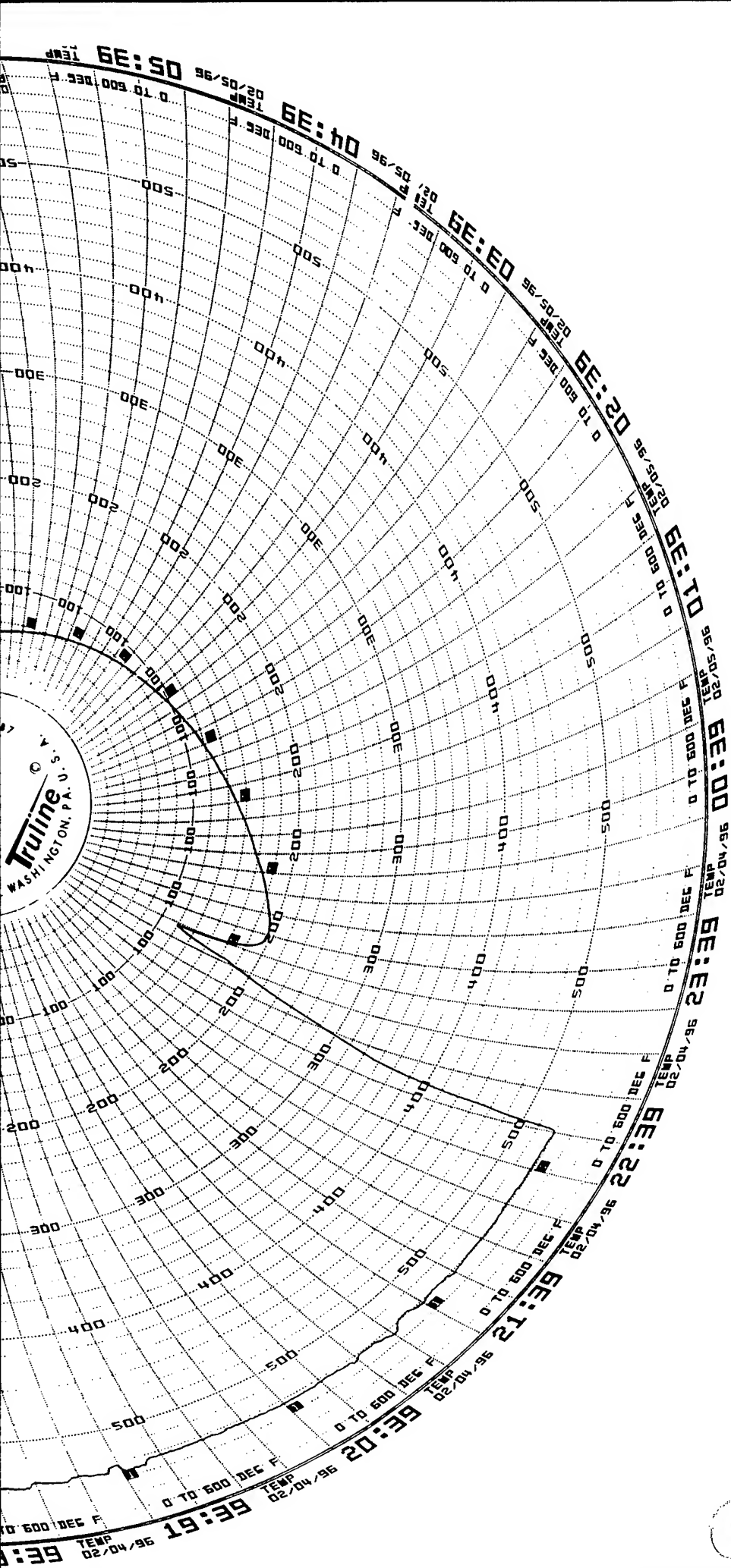
## GEM

|                 |                          |        |  |  |       |       |       |       |       |       |       |       |       |       |       |       |       |      |
|-----------------|--------------------------|--------|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| NOx-B           | Interconnecting Duct NOx | ppm    |  |  | 0.3   | 0.2   | 2.5   | 2.2   | 2.2   | 2.5   | 2.7   | 3.3   | 3.8   | 4.5   | 4.5   | 4.0   | 4.3   | 4.3  |
| THC-B           | Interconnecting Duct THC | ppm    |  |  | 69.9  | 75.9  | 21.6  | 68.5  | 73.8  | 84.4  | 71.5  | 70.0  | 67.8  | 72.1  | 100.0 | 100.0 | 100.0 | 142  |
| CO              | Stack's CO               | ppm    |  |  | 0.0   | 0.0   | 0.5   | 0.5   | 0.0   | 0.0   | 0.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.5   | 0.5  |
| THC             | Stack's THC              | ppm    |  |  | 0.4   | 0.5   | 0.9   | 1.1   | 2.5   | 6.0   | 5.7   | 5.3   | 5.9   | 4.5   | 4.6   | 4.5   | 4.5   | 4.5  |
| NOx             | Stack's NOx              | ppm    |  |  | 48.0  | 50.6  | 84.4  | 57.2  | 51.2  | 56.6  | 62.6  | 64.5  | 56.7  | 61.8  | 65.2  | 62.9  | 62.8  | 68.4 |
| SO2             | Stack SO2                | ppm    |  |  | 9.2   | 5.0   | 10.4  | 5.1   | 0.5   | 1.5   | 1.5   | 2.0   | 2.0   | 1.0   | 1.5   | 1.5   | 1.0   | 1.5  |
| O2              | Stack's O2               | %      |  |  | 12.48 | 12.88 | 10.38 | 12.88 | 12.30 | 12.05 | 11.95 | 11.88 | 12.43 | 11.93 | 11.35 | 11.98 | 11.98 | 11.7 |
| CO2             | Stack's CO2              | %      |  |  | 5.96  | 5.54  | 4.27  | 5.46  | 6.14  | 5.92  | 6.27  | 6.08  | 5.70  | 5.96  | 6.44  | 6.08  | 6.10  | 6.28 |
| TIT-300         | Ambient Temp             | Deg. F |  |  | 17°   | 21°   | 20    | 17    | 23.3  | 22.2  | 22.9  | 23.3  | 20.1  | 16.4  | 14.3  | 13.1  | 14.2  | 13.2 |
| Weather Service | Relative Humidity        |        |  |  | 51.9  | 43.7  | 50.8  | 44.3  | 46.9  | 50.7  | 51.7  | 47.8  | 60.0  | 73.2  | 72.6  | 87.0  | 73.0  | 76.9 |

1

2







# Pre - START-UP (1 of 3)

Date: 6 FEB 96  
Time: 1630

Test Number: T 4  
Ramp-Up Rate: 75°/Hr  
Soak Time: 6 Hrs  
Soak Temp: 500°

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc. have been returned to a position capable of sustaining system operations.

75%

## ELECTRICAL

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_ Afterburner I.D Fan (M-158)  
\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after all motors have been "BUMPED" to verify operations.

## Calibrate CEM

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx
- ☒ Stack SO2
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O2
- ☒ Stack CO2

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|             | ANALYZER LOGGER |                  |
| 204.1       | 204             | 205 Y            |
| 91.5        | 90              | 91.8 Y           |
| 204.1       | 204             | 204.6 N          |
| 399.9       | 399             | 399.0 Y          |
| 91.5        | 91.5            | 91.1 Y           |
| 437.4       | 440             | 437.0 Y          |
| 21.89       | 21.0            | 21.85 Y          |
| 17.95       | 17.95           | 17.92 Y          |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

## Datalogger/Computer is ON

- ☒ Record Time (Computer Clock)
- ☒ Record Ambient Temperature (TIT-300)
- ☒ Record Ambient Humidity (call Weather Service 664-3010 or 945-7000)

## Pre - Spike Activities

- ☒ Lock-out all Motors; Complete Exclusion Log
- ☒ Secure Equipment Pad and Access Road w/ Chains
- ☒ Spike Test Materials and Furnace Test Plates

## LOADING/UNLOADING (2 of 3)

Date: 6 FEB 96  
Time: 1630

Test Number \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### FIELD ACTIVITIES

Initial each item.

#### ☒ Load Furnace with Materials and Thermocouples

For each rack-bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

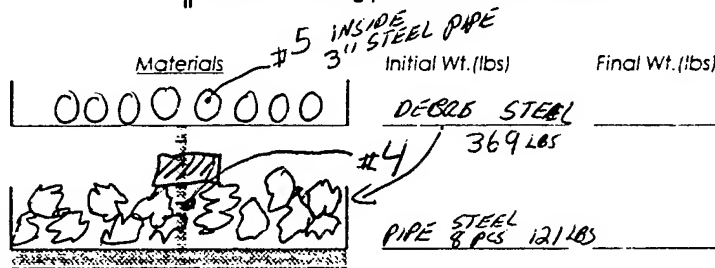
#1 Rack A's Characteristics. (1453 LBS)

Initial Wt. (lbs) Final Wt. (lbs)

RACK 600 LBS

CONCRETE DEBRIS 365 LBS

\*\* Secure pipe to prevent pipes from rolling



Take Pictures

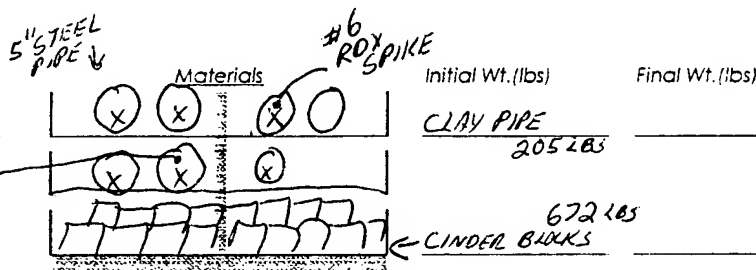
#2 Rack B's Characteristics. (1547 LBS)

Initial Wt. (lbs) Final Wt. (lbs)

RACK 430 LBS

5" STEEL PIPE 240 LBS

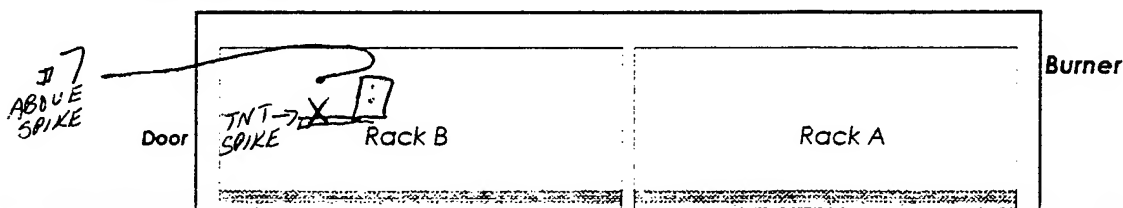
#3 TET SPIKE



Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

#### ☒ Mark Locations of Thermocouples



#### ☒ Roll Calls and Close Furnace Door

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

#### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_

Soak Time: \_\_\_\_\_

Soak Temp: \_\_\_\_\_

### AFTERBURNER START-UP

Initial and record time for each item.



Start "I.D. FAN". Adjust fan speed to maintain a system draft  $< -0.5$  In. WC



Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain  $< -0.5$  In. WC



Start "OXIDIZER" (Burner). Adjust fan speed to maintain  $< -0.5$  In. WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.



Start "DATALOGGER" Pushbuttons on the Computer.



Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain  $< -0.5$  In. WC

@ 600 F: \_\_\_\_\_ :Time

@ 1200 F: \_\_\_\_\_ :Time

@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature

1800°F and system draft @  $< -0.5$  In WC.

### FURNACE START-UP

Initial and record time for each item.



Set Bleed Air Damper to 75%



Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain  $< -0.5$  In. WC



Set Controller to "MANUAL". Set controller output to 0.0



Turn Furnace Key to "BURNER" Position.



Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.



Open Bleed Air Valve to 100%



Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.

Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain  $< -0.5$  In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.



Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL DOWN

Initial and record time for each item.



Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.



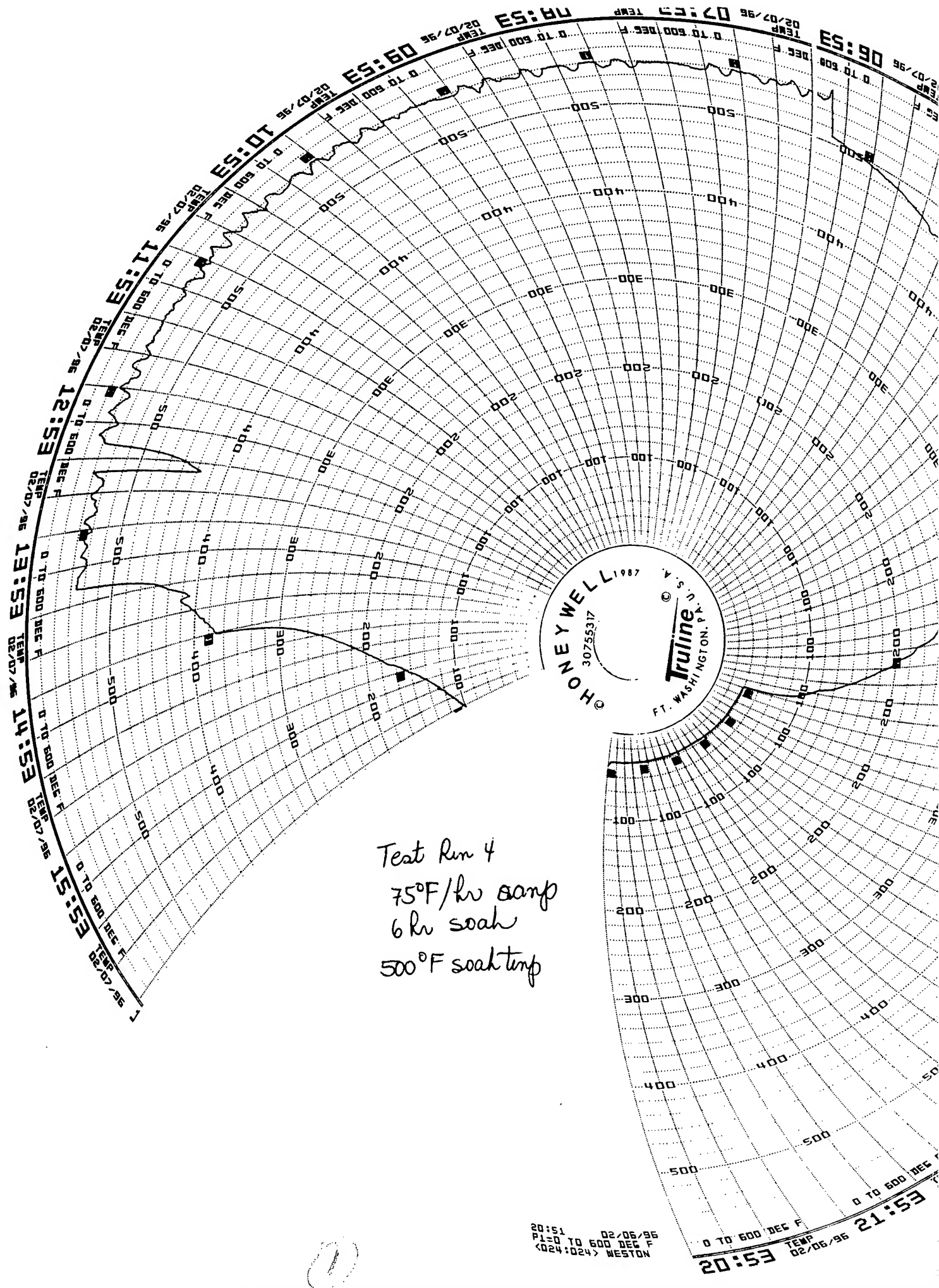
STOP "OXIDIZER" and "AIR BLOWER"



STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

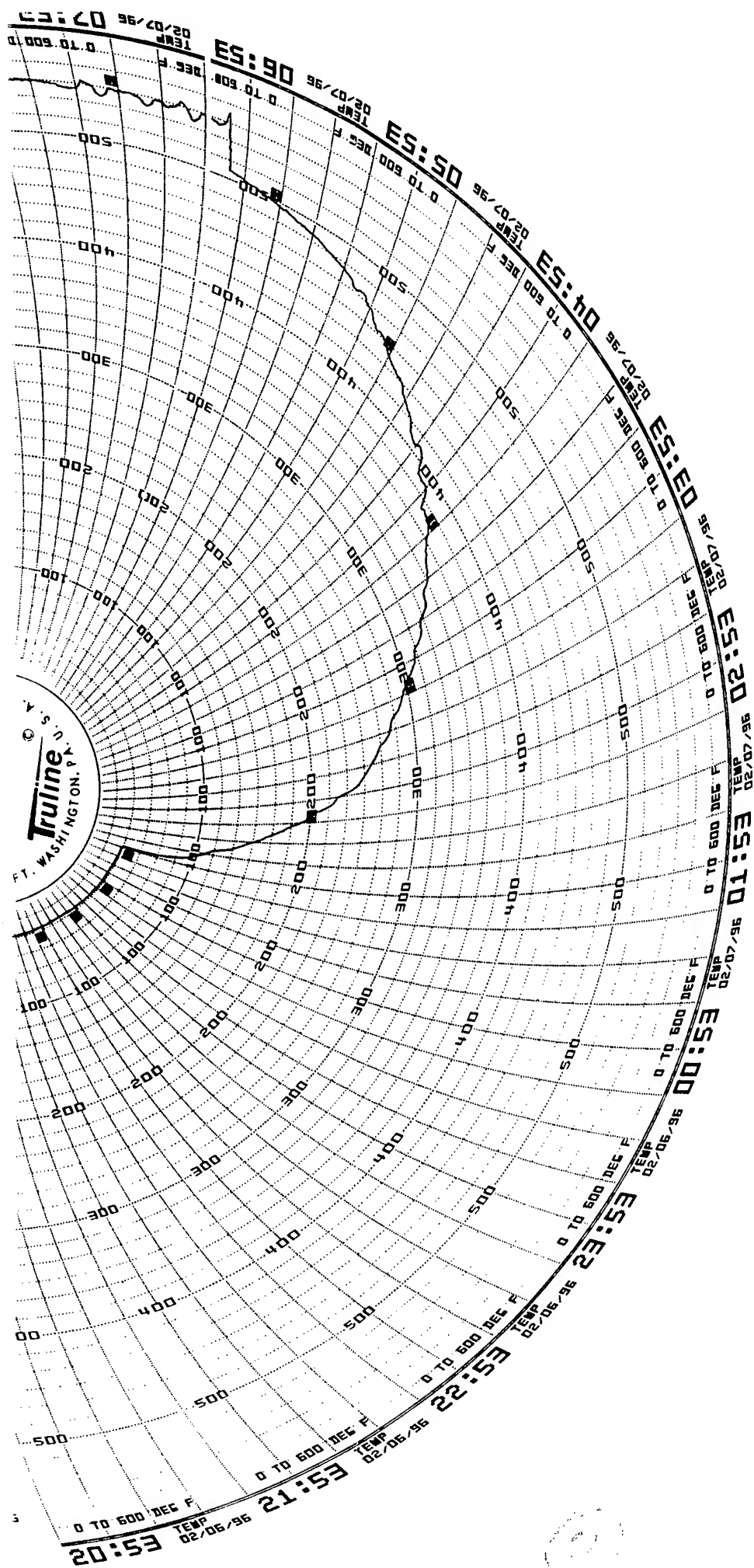




Test Run 4  
75°F/hr ramp  
6 hr soak  
500°F soak temp

20:51 02/06/96  
P1=0 TO 600 DEC F  
<024:024> WESTON

ES:15 ES:16 ES:17 ES:18 ES:19 ES:20 ES:21  
TEMP 02/06/96  
0 TO 600 DEC F



**Pre - START-UP (1 of 3)**

Date: 7 Feb 96  
Time: 19 20

Test Number: 5  
Ramp-Up Rate: 75°F/hr  
Soak Time: 1 Hr  
Soak Temp: 600°F

**MECHANICAL**

Initial each item.

- ☒ **Inspection doors/manways are SECURED**  
☒ **Gas Valves OPEN**  
☒ **View/Inspection Ports CLOSED**  
☐ **Record Gas (Propane) Valve Position**

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

75%**ELECTRICAL**

Initial each item.

- ☒ **All Lockout/Tagouts (1-5) are ACCOUNTED.**  
☒ **Furnace and Afterburner Control Breakers are ON.**  
☒ **Verify Emergency Pushbuttons are NOT ENGAGED.**  
☒ **BUMP Motors and switch to "AUTO"**

\_\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_\_ Afterburner I.D Fan (M-158)  
\_\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☒ **Calibrate CEM**

- ☒ Interconnecting Duct - NOx  
☒ Interconnecting Duct - THC  
☒ Stack NOx  
☒ Stack SO<sub>2</sub>  
☒ Stack THC  
☒ Stack CO  
☒ Stack O<sub>2</sub>  
☒ Stack CO

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
| 204.1       | 204             | N                |
| 91.5        | 91              | Y                |
| 204.1       | 204             | N                |
| 399.9       | 399             | Y                |
| 91.5        | 90              | Y                |
| 437.4       | 442             | N                |
| 21.89       | 21.8            | Y                |
| 17.95       | 17.95           | Y                |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

☒ **Datalogger/Computer is ON**

\_\_\_\_\_ Record Time (Computer Clock)  
\_\_\_\_\_ Record Ambient Temperature (TIT-300)  
\_\_\_\_\_ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

☐ **Pre - Spike Activities**

\_\_\_\_\_ Lock-out all Motors: Complete Exclusion Log  
\_\_\_\_\_ Secure Equipment Pad and Access Road w/ Chains  
\_\_\_\_\_ Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Date: 2-7-96  
Time: 1945

Test Number \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

## FIELD ACTIVITIES

Initial each item.

### 2.7 Load Furnace with Materials and Thermocouples

#1 Rack A's Characteristics. (1434) <sup>dry</sup> 1409

For each rack bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

| Initial Wt. (lbs)    | Final Wt. (lbs) | Materials            | Initial Wt. (lbs) | Final Wt. (lbs) |
|----------------------|-----------------|----------------------|-------------------|-----------------|
| Rack 600#            |                 | Concrete Debris      | Debris Steel      | 1351#           |
| Concrete Debris 976# |                 | Steel pipe 8' p.c.s. |                   | 1453#           |

\*\* Secure pipe to prevent pipes from rolling

#2 Rack B's Characteristics. <sup>dry</sup> 1493 #7 wall RDX

Take Pictures

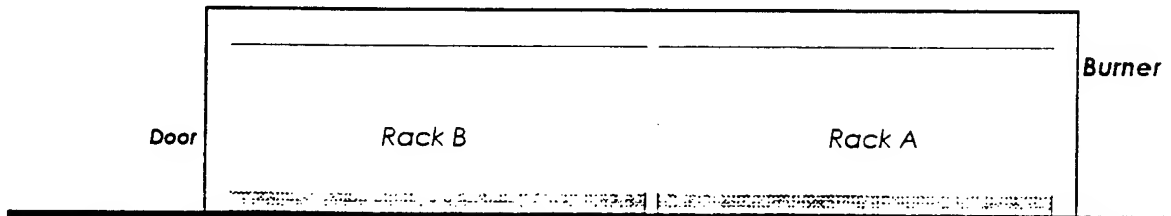
| Initial Wt. (lbs)   | Final Wt. (lbs) | Materials     | Initial Wt. (lbs) | Final Wt. (lbs) |
|---------------------|-----------------|---------------|-------------------|-----------------|
| Rack 430#           |                 | clay pipe     |                   | 1252#           |
| 5' Steel pipe 1496# |                 | cinder blocks |                   | 1045#           |

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks

CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris

Total Weight of the two racks must be less than 3,000 Lbs.

### 2.8 Mark Locations of Thermocouples



### 2.9 Roll Cans and Close Furnace Door

*[Signature]*  
*[Signature]*  
*[Signature]*

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### 2.10 Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE



## START-UP (3 of 3)

Date: 2-7-96  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### AFTERBURNER START-UP

Initial and record time for each item.

☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC

☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain <-0.5 In.WC

☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain <-0.5 In.WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

☒ Start "DATALOGGER" Pushbuttons on the Computer.

☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 In.WC

@ 600 F: \_\_\_\_\_ :Time  
@ 1200 F: \_\_\_\_\_ :Time  
@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature  
1800°F and system draft @ <-0.5 In WC.

### FURNACE START-UP

Initial and record time for each item.

☒ Set Bleed Air Damper to 75%

☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain <-0.5 In.WC

☒ Set Controller to "MANUAL". Set controller output to 0.0

☒ Turn Furnace Key to "BURNER" Position.

☒ Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

☒ Open Bleed Air Valve to 100%

☒ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust  
ID fan speed to maintain <-0.5 In.WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.

☒ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

☒ STOP "OXIDIZER" and "AIR BLOWER"

☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

☒ **\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

Rack #1 1434 - Whole Rack  
 w/o PIPE 1315  
 ROCKS  
 SYL  
 CON

Rack #1  
 Rack weigh 600 # ?

Rack + 375 lbs 976 ?  
 of Concrete Rebar.

Rack + Concrete Rebar 1351 ?  
 + Steel Rebar (375)

Pipe 8 pieces 1453

---

Rack #2  
 Total Rack 1496  
~~Rack~~ w/o Pipe 1252  
 w/o Pipe + Clay 1048  
 w/o Pipe + Clay + Blocks 430

# HOURLY DATA LOG

Date: 7 FEB 96  
Time: \_\_\_\_\_

Test Number: 4  
Ramp-Up Rate: 75°F/hr  
Soak Time: 6 hrs  
Soak Temp: 500°F

| Tag | Description | Unit | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 |
|-----|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|-----|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

Time:

## FURNACE

|         |                                 |        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
|---------|---------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| PIT-232 | Fuel Gas Pressure               | in. WC | 3.71  | 3.68  | 10.58 | 10.46 | 10.91 | 11.30 | 11.32 | 11.4  | 11.18 | 10.86 | 10.60 | 10.70 | 10.44 | 8.08  | 3.58  |  |
| FIT-231 | Fuel Gas Flow                   | CFH    | -0    | -0    | 65    | 74    | 87    | 108   | 109   | 117   | 108   | 102   | 94    | 104   | 98    | 39    | 0     |  |
| PIT-222 | Combustion Air Pressure         | in. WC | 24.88 | 24.78 | 25.88 | 25.95 | 25.87 | 25.92 | 25.80 | 25.78 | 25.63 | 25.25 | 25.03 | 24.46 | 24.69 | 24.18 | 25.51 |  |
| FIT-221 | Combustion Air Flow             | CFH    | 11948 | 11936 | 10380 | 10225 | 10152 | 10041 | 10028 | 9958  | 9979  | 9963  | 9959  | 9882  | 9875  | 10459 | 11525 |  |
| PIT-158 | Chamber Pressure                | in. WC | -0.28 | -0.29 | -0.29 | -0.26 | -0.23 | -0.25 | -0.22 | -0.21 | -0.20 | -0.22 | .26   | -0.25 | -0.30 | -0.10 | -0.16 |  |
| TIT-201 | Recorder Temperature            | Deg. F | 31    | 32    | 217   | 276   | 375   | 445   | 496   | 546   | 550   | 546   | 539   | 546   | 548   | 451   | 517   |  |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg. F | 31    | 32    | 220   | 299   | 379   | 449   | 501   | 551   | 554   | 550   | 543   | 549   | 551   | 451   | 312   |  |
| TIT-203 | Material Thermocouple #1        | Deg. F | 33    | 34    | 211   | 297   | 376   | 443   | 498   | 552   | 550   | 546   | 541   | 545   | 547   | 469   | 340   |  |
| TIT-204 | Material Thermocouple #2        | Deg. F | 33    | 33    | 98    | 159   | 218   | 275   | 327   | 376   | 410   | 435   | 455   | 473   | 483   | 477   | 430   |  |
| TIT-205 | Material Thermocouple #3        | Deg. F | 32    | 33    | 166   | 259   | 327   | 392   | 443   | 496   | 502   | 504   | 507   | 513   | 515   | 478   | 552   |  |
| TIT-206 | Material Thermocouple #4        | Deg. F | 31    | 32    | 177   | 247   | 320   | 389   | 435   | 496   | 497   | 489   | 506   | 530   | 531   | 459   | 261   |  |
| TIT-207 | Material Thermocouple #5        | Deg. F | 32    | 33    | 240   | 323   | 403   | 485   | 531   | 586   | 577   | 577   | 578   | 598   | 588   | 474   | 530   |  |
| AVG.    |                                 |        | 510   |       |       |       |       |       |       |       |       |       | 529   |       |       |       |       |  |

## AFTERBURNER

|         |                                  |        |      |      |      |      |      |      |      |      |       |       |       |       |       |      |      |  |
|---------|----------------------------------|--------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|------|------|--|
| TIT-131 | Combustor Burner Temp. Control   | Deg. F | 1794 | 1814 | 1807 | 1804 | 1810 | 1811 | 1801 | 1799 | 1821  | 1821  | 1784  | 1794  | 1789  | 1809 | 1824 |  |
| FIT-140 | Furnace Flow                     | CFH    | 2120 | 2337 | 2253 | 2202 | 2158 | 2355 | 2213 | 2258 | 2253  | 2229  | 2192  | 2169  | 2120  | 2258 | 2151 |  |
| PIT-151 | Furnace Pressure (Furnace Draft) | in. WC | 0.45 | 0.60 | 0.51 | 0.39 | 0.40 | 0.58 | 0.48 | 0.42 | -0.35 | -0.30 | -0.32 | -0.30 | -0.25 | 0.54 | 0.32 |  |
| TIT-145 | Combustor Temperature            | Deg. F | 1796 | 1813 | 1811 | 1811 | 1813 | 1815 | 1817 | 1801 | 1810  | 1809  | 1787  | 1835  | 1810  | 1794 | 1832 |  |
| PIT-133 | Fuel Pressure                    | PSIG   | 0.72 | 0.79 | 0.56 | 0.48 | 0.25 | 0.17 | 0.15 | 0.14 | -0.14 | -0.11 | -0.23 | -0.05 | -0.06 | 0.11 | 0.14 |  |
| TIT-121 | Fuel Gas Flow                    | CFH    | 972  | 1047 | 859  | 771  | 661  | 629  | 602  | 601  | 582   | 550   | 664   | 357   | 618   | 604  | 609  |  |

## GEM

|                 |                          |        |       |       |       |       |       |       |       |       |       |       |       |       |       |      |       |  |
|-----------------|--------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|--|
| NOx-B           | Interconnecting Duct NOx | ppm    | -1.1  | 1.3   | -0.9  | -0.6  | 0.1   | 0.6   | 1.1   | 1.9   | 1.8   | 2.0   | 1.6   | 1.7   | 1.7   | 0.2  | 0.0   |  |
| THC-B           | Interconnecting Duct THC | ppm    | 0.0   | 0.0   | 53.6  | 54.4  | 53.0  | 45.0  | 47.1  | 43.8  | 42.8  | 44.1  | 41.8  | 38.1  | 39.2  | 41.1 | 4.8   |  |
| CO              | Stack's CO               | ppm    | -0.5  | 27.2  | -0.5  | -0.5  | -0.5  | -0.5  | -0.5  | -0.5  | -0.5  | -0.5  | 0.0   | 0.0   | 0.0   | 0.0  | 0.0   |  |
| THC             | Stack's THC              | ppm    | -4.6  | -4.5  | 0.1   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0   |  |
| NOx             | Stack's NOx              | ppm    | 47.8  | -4.0  | 44.9  | 47.0  | 59.5  | 53.2  | 56.1  | 61.0  | 53.5  | 69.2  | 46.0  | 44.1  | 87.1  | 93.3 | 102   |  |
| SO2             | Stack's SO2              | ppm    | -2.0  | -2.5  | -2.5  | -2.0  | -1.0  | -0.5  | -0.5  | 0.0   | 0.0   | -0.5  | 6.0   | 0.0   | -0.5  | 1.0  | 1.0   |  |
| O2              | Stack's O2               | %      | 17.40 | 15.35 | 15.48 | 14.13 | 13.65 | 12.58 | 12.15 | 11.85 | 11.77 | 11.75 | 11.77 | 11.82 | 11.80 | 10.5 | 12.05 |  |
| CO2             | Stack's CO2              | %      | 5.64  | 0.26  | 6.04  | 6.08  | 6.10  | 6.16  | 6.24  | 6.62  | 5.70  | 6.48  | 5.12  | 5.56  | 4.96  | 5.60 | 4.98  |  |
| TIT-300         | Ambient Temp             | Deg. F | 26.5  |       |       |       | 31.3  |       | 34.8  | 34    | 40.8  | 50.6  | 55    | 57    | 62.2  | 53   | 52    |  |
| Weather Service | Relative Humidity        |        | 99.9  |       |       |       | 90.7  |       | 85.8  |       | 66.4  | 52.0  | 37    | 32    | 33    | 0.2  | 42.6  |  |

## HOURLY DATA LOG ( \_ of \_ )

Date: 7 FEB 96

**Time:****Test Number:**

**Ramp-Up Rate:**

**Seat Time:**

**Seek Terms:**

| Tag | Description | Unit |
|-----|-------------|------|
|     |             | 2400 |

**Time:**

## **FURNACE**

|         |                                 |       |       |
|---------|---------------------------------|-------|-------|
| PIT-232 | Fuel Gas Pressure               | In.WC | 11.39 |
| FIT-231 | Fuel Gas Flow                   | CFH   | 94    |
| PIT-222 | Combustion Air Pressure         | In.WC | 25.27 |
| FIT-221 | Combustion Air Flow             | CFH   | 10430 |
| PIT-168 | Chamber Pressure                | In.WC | -0.30 |
| TIT-201 | Recorder Temperature            | Deg.F | 307   |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg.F | 308   |
| TIT-203 | Material Thermocouple #1        | Deg.F | 314   |
| TIT-204 | Material Thermocouple #2        | Deg.F | 238   |
| TIT-205 | Material Thermocouple #3        | Deg.F | 236   |
| TIT-206 | Material Thermocouple #4        | Deg.F | 245   |
| "T-207  | Material Thermocouple #5        | Deg.F | 335   |

## AFTERBURNER

[illegible]**CEM**[illegible]

# HOURLY DATA LOG ( of )

Date: 8 FEB 96

Time:

Test Number: # 5

Ramp-Up Rate: 75°F/hr

Soak Time: 4 hrs

Soak Temp: 600°F

| Tag | Description | Unit | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 |  |  |  |  |  |  |  |
|-----|-------------|------|------|------|------|------|------|------|------|------|------|------|--|--|--|--|--|--|--|
|-----|-------------|------|------|------|------|------|------|------|------|------|------|------|--|--|--|--|--|--|--|

Time:

## FURNACE

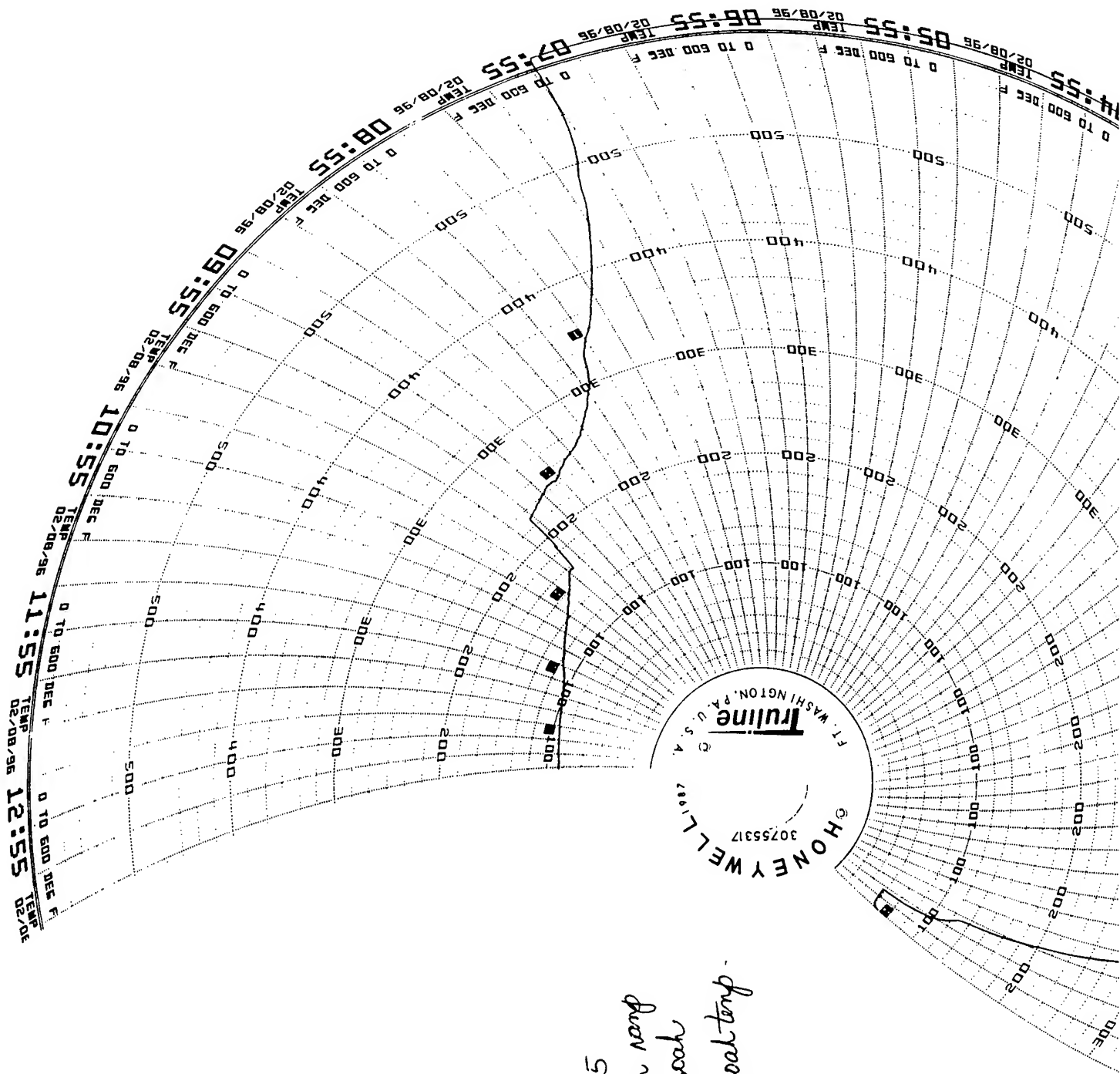
|         |                                 |        |       |       |       |       |       |       |       |       |       |       |  |  |  |  |  |  |
|---------|---------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|--|--|--|--|
| PIT-232 | Fuel Gas Pressure               | in. WC | 11.30 | 11.58 | 11.88 | 12.14 | 11.95 | 11.69 | 11.51 | 11.26 | 10.3  | 9.17  |  |  |  |  |  |  |
| FIT-231 | Fuel Gas Flow                   | CFH    | 90    | 105   | 121   | 135   | 121   | 115   | 110   | 105   | 82    | 37    |  |  |  |  |  |  |
| PIT-222 | Combustion Air Pressure         | in. WC | 25.25 | 25.31 | 25.37 | 25.43 | 25.49 | 25.55 | 25.20 | 24.88 | 24.2  | 23.67 |  |  |  |  |  |  |
| FIT-221 | Combustion Air Flow             | CFH    | 10371 | 10303 | 10203 | 10175 | 10213 | 10275 | 10261 | 10369 | 10403 | 10952 |  |  |  |  |  |  |
| PIT-158 | Chamber Pressure                | in. WC | -0.25 | -25   | -25   | -23   | -21   | -44   | -44   | -46   | -40   | -41   |  |  |  |  |  |  |
| TIT-201 | Recorder Temperature            | Deg. F | 378   | 455   | 527   | 601   | 626   | 625   | 618   | 614   | 456   | 234   |  |  |  |  |  |  |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg. F | 381   | 459   | 531   | 605   | 627   | 627   | 621   | 617   | 442   | 235   |  |  |  |  |  |  |
| TIT-203 | Material Thermocouple #1        | Deg. F | 401   | 479   | 553   | 630   | 656   | 648   | 643   | 640   | 270   | 220   |  |  |  |  |  |  |
| TIT-204 | Material Thermocouple #2        | Deg. F | 312   | 379   | 442   | 509   | 547   | 559   | 561   | 562   | 280   | 239   |  |  |  |  |  |  |
| TIT-205 | Material Thermocouple #3        | Deg. F | 334   | 410   | 480   | 550   | 587   | 580   | 586   | 595   | 283   | 243   |  |  |  |  |  |  |
| TIT-206 | Material Thermocouple #4        | Deg. F | 355   | 430   | 503   | 578   | 617   | 620   | 614   | 613   | 303   | 253   |  |  |  |  |  |  |
| TIT-207 | Material Thermocouple #5        | Deg. F | 414   | 496   | 575   | 650   | 667   | 654   | 655   | 653   | 281   | 254   |  |  |  |  |  |  |

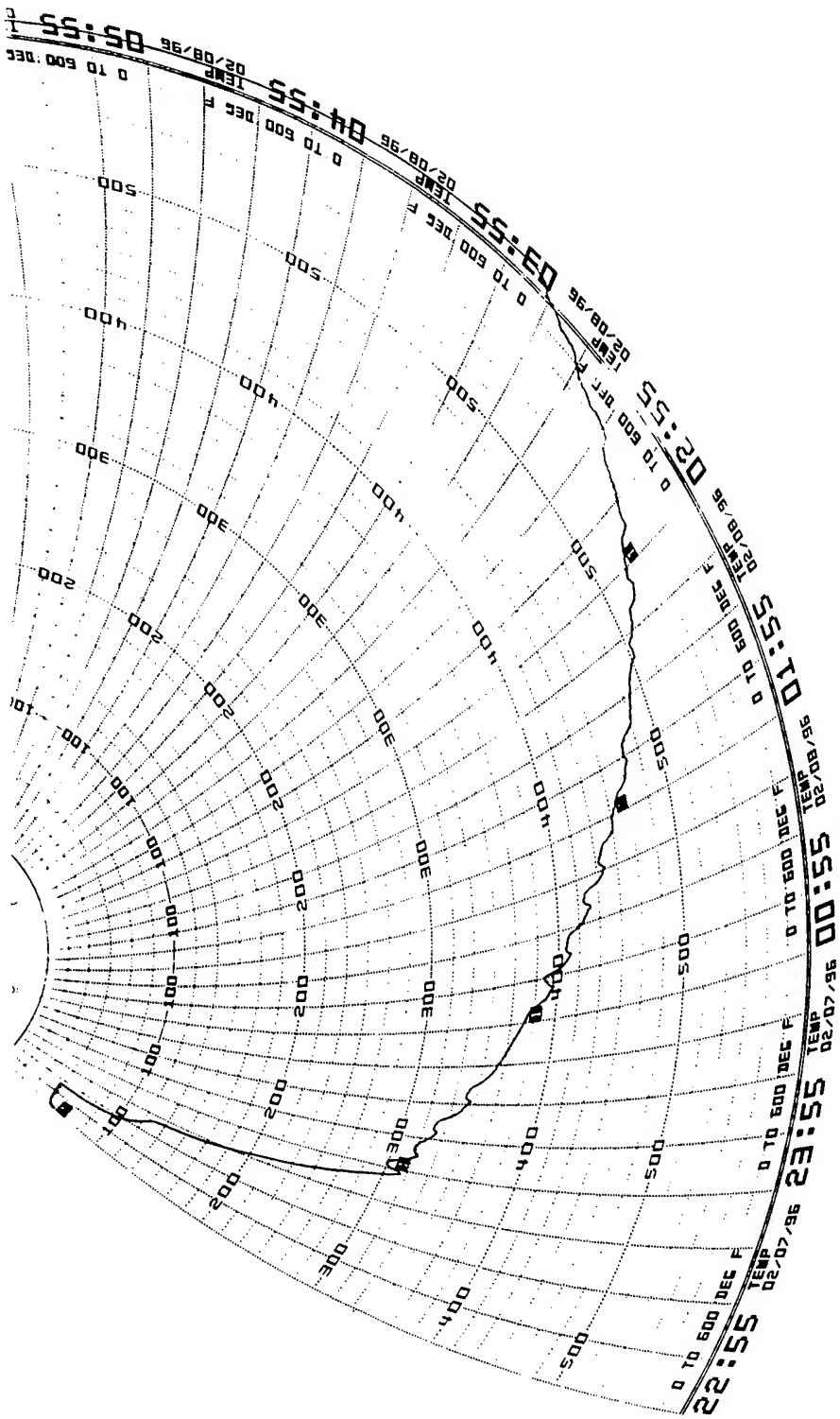
## AFTERBURNER

|         |                                |        |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |
|---------|--------------------------------|--------|------|------|------|------|------|------|------|------|------|------|--|--|--|--|--|--|
| TIT-131 | Combustor Burner Temp. Control | Deg. F | 1518 | 1805 | 1889 | 1793 | 1827 | 1837 | 1838 | 1826 | 1820 | 1804 |  |  |  |  |  |  |
| FIT-148 | Fumes Flow                     | CFH    | 2210 | 2246 | 2352 | 2318 | 2199 | 2073 | 2116 | 2081 | 3100 | 2913 |  |  |  |  |  |  |
| PIT-151 | Fumes Pressure (Furnace Draft) | in. WC | 0.42 | 0.42 | 0.47 | 0.42 | 0.37 | 0.30 | 0.28 | .27  | .87  | .99  |  |  |  |  |  |  |
| TIT-145 | Combustor Temperature          | Deg. F | 1818 | 1812 | 1816 | 1830 | 1806 | 1805 | 1821 | 1831 | 1822 | 1800 |  |  |  |  |  |  |
| PIT-133 | Fuel Pressure                  | PSIG   | 0.16 | 0.13 | 0.13 | 0.08 | 0.10 | 0.17 | 0.13 | .09  | .42  | .76  |  |  |  |  |  |  |
| TIT-121 | Fuel Gas Flow                  | CFH    | 607  | 595  | 582  | 481  | 472  | 513  | 579  | 462  | 731  | 1043 |  |  |  |  |  |  |

## CEM

|                 |                          |        |       |       |       |       |       |       |       |       |       |       |  |  |  |  |  |  |
|-----------------|--------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|--|--|--|--|
| NOx-B           | Interconnecting Duct NOx | ppm    | 0.7   | 1.1   | 1.4   | 2.05  | 2.5   | 2.1   | 2.1   | 2.0   | 1.0   | .6    |  |  |  |  |  |  |
| THC-B           | Interconnecting Duct THC | ppm    | -30.7 | -31.0 | -31.8 | -31.3 | -31.6 | -31.7 | -30.4 | -30.3 | -30.4 | -30.4 |  |  |  |  |  |  |
| CO              | Stack's CO               | ppm    | 0.0   | 0.0   | -0.5  | 0.0   | 0.0   | 0.0   | 0.0   | -5    | 0.0   | 0.0   |  |  |  |  |  |  |
| THC             | Stack's THC              | ppm    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |  |  |  |  |  |  |
| NOx             | Stack's NOx              | ppm    | 13.7  | 56.0  | 54.8  | 58.5  | 37.0  | 41.0  | 79.6  | 71.5  | 62.1  | 44.4  |  |  |  |  |  |  |
| SO2             | Stack SO2                | ppm    | 5.5   | 5.0   | 4.5   | 4.5   | 4.0   | 3.5   | 4.0   | 3.0   | 2.9   | 2.5   |  |  |  |  |  |  |
| O2              | Stack's O2               | %      | 11.07 | 11.40 | 11.28 | 10.75 | 13.08 | 12.40 | 12.70 | 11.05 | 11.00 | 12.43 |  |  |  |  |  |  |
| CO2             | Stack's CO2              | %      | 6.24  | 6.04  | 6.00  | 6.66  | 6.52  | 5.28  | 6.42  | 7.00  | 5.80  | 5.36  |  |  |  |  |  |  |
| TIT-300         | Ambient Temp             | Deg. F |       | 36    |       |       | 36    |       | 43.2  |       | 55    |       |  |  |  |  |  |  |
| Weather Service | Relative Humidity        |        |       | 79.7  |       |       | 95.1  |       | 78.4  |       | 79.3  |       |  |  |  |  |  |  |





22:53  
0 TO 500 DEC F  
TEMP 02/07/96  
WESTON

**Pre - START-UP (1 of 3)**Date: 12 FEBTime: 0030Test Number: 76Ramp-Up Rate: 75°/HrSoak Time: 2 HrsSoak Temp: 600°**MECHANICAL**

Initial each item.

☒ **Inspection doors/manways are SECURED**☒ **Gas Valves OPEN**☒ **View/Inspection Ports CLOSED**☒ **Record Gas (Propane) Valve Position**

Verify all valves, doors, inspection ports, manway, etc  
have been returned to a position capable of sustaining  
system operations

**ELECTRICAL**

Initial each item.

☒ **All Lockout/Tagouts (1-5) are ACCOUNTED.**☒ **Furnace and Afterburner Control Breakers are ON.**☒ **Verify Emergency Pushbuttons are NOT ENGAGED.**☒ **BUMP Motors and switch to "AUTO"**

\_\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_\_ Afterburner I.D. Fan (M-158)  
\_\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☒ **Calibrate CEM**

✓ Interconnecting Duct - NOx  
✓ Interconnecting Duct - THC  
✓ Stack NOx  
✓ Stack SO<sub>2</sub>  
✓ Stack THC  
✓ Stack CO  
✓ Stack O<sub>2</sub>  
✓ Stack CO<sub>2</sub>

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

|       |      |   |
|-------|------|---|
| 75.6  | 70   | Y |
| 50.2  | 50   | Y |
| 75.6  | 70   | N |
| 126.4 | 127  | N |
| 50.2  | 50   | Y |
| 243.2 | 239  | Y |
| 11.94 | 11.4 | Y |
| 9.92  | 9.9  | Y |

**\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED**☒ **Datalogger/Computer is ON**

\_\_\_\_\_ Record Time (Computer Clock)  
\_\_\_\_\_ Record Ambient Temperature (TIT-300)  
\_\_\_\_\_ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

☐ **Pre - Spike Activities**

\_\_\_\_\_ Lock-out all Motors: Complete Exclusion Log  
\_\_\_\_\_ Secure Equipment Pad and Access Road w/ Chains  
\_\_\_\_\_ Spike Test Materials and Furnace Test Plates



# LOADING/UNLOADING (2 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test Number #6  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

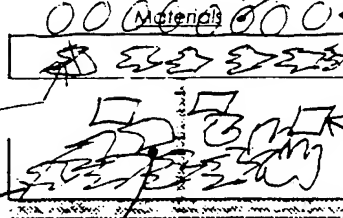
#1 Rack A's Characteristics. 600 LBS

TOTAL 1501

Initial Wt. (lbs) Final Wt. (lbs)  
STEEL DEBRIS ~~600~~ 366 LBS  
367 LBS

ROCK DEBRIS 348 LBS  
367 LBS

\*\* Secure pipe to prevent pipes from rolling



#3 Take Pictures

Initial Wt. (lbs) Final Wt. (lbs)  
8 RES PIPE 78 LBS

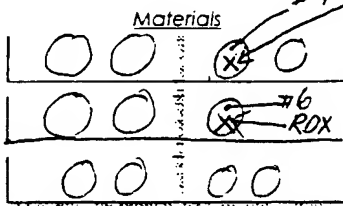
CINDER BLOCK 89 LBS  
816 LBS

#2 Rack B's Characteristics.

TOTAL 1496

Initial Wt. (lbs) Final Wt. (lbs)  
RACK 430 430 LBS

5" STEEL PIPE 240 LBS  
240 LBS



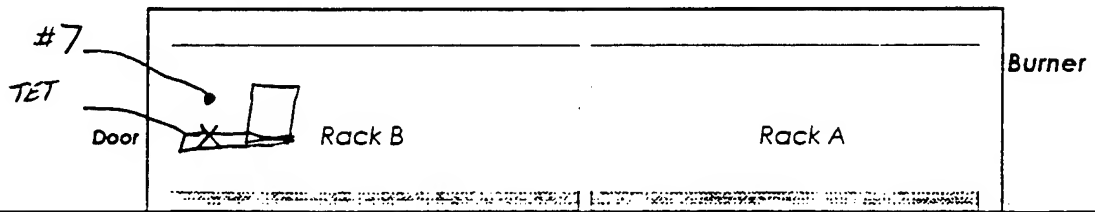
Take Pictures

Initial Wt. (lbs) Final Wt. (lbs)  
CLAY PIPE 205 LBS  
205 LBS

CINDER BLOCK 611 LBS  
816 LBS

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



### ☐ Roll Calls and Close Furnace Door

Kevin J. Klinefelter  
Mark M. Mullen

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test #6  
Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### AFTERBURNER START-UP

Initial and record time for each item.

☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC

☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC

☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

☒ Start "DATALOGGER" Pushbuttons on the Computer.

☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 In. WC

@ 600 F: \_\_\_\_\_ :Time

@ 1200 F: \_\_\_\_\_ :Time

@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature

1800°F and system draft @ < -0.5 In WC.

### FURNACE START-UP

Initial and record time for each item.

☒ Set Bleed Air Damper to 75%

☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC

☒ Set Controller to "MANUAL". Set controller output to 0.0

☒ Turn Furnace Key to "BURNER" Position.

☒ Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

☒ Open Bleed Air Valve to 100%

☒ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain < -0.5 In. WC, afterburner temp @, 1800 Deg F, and furnace temp @, SOAK temperature.

☒ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

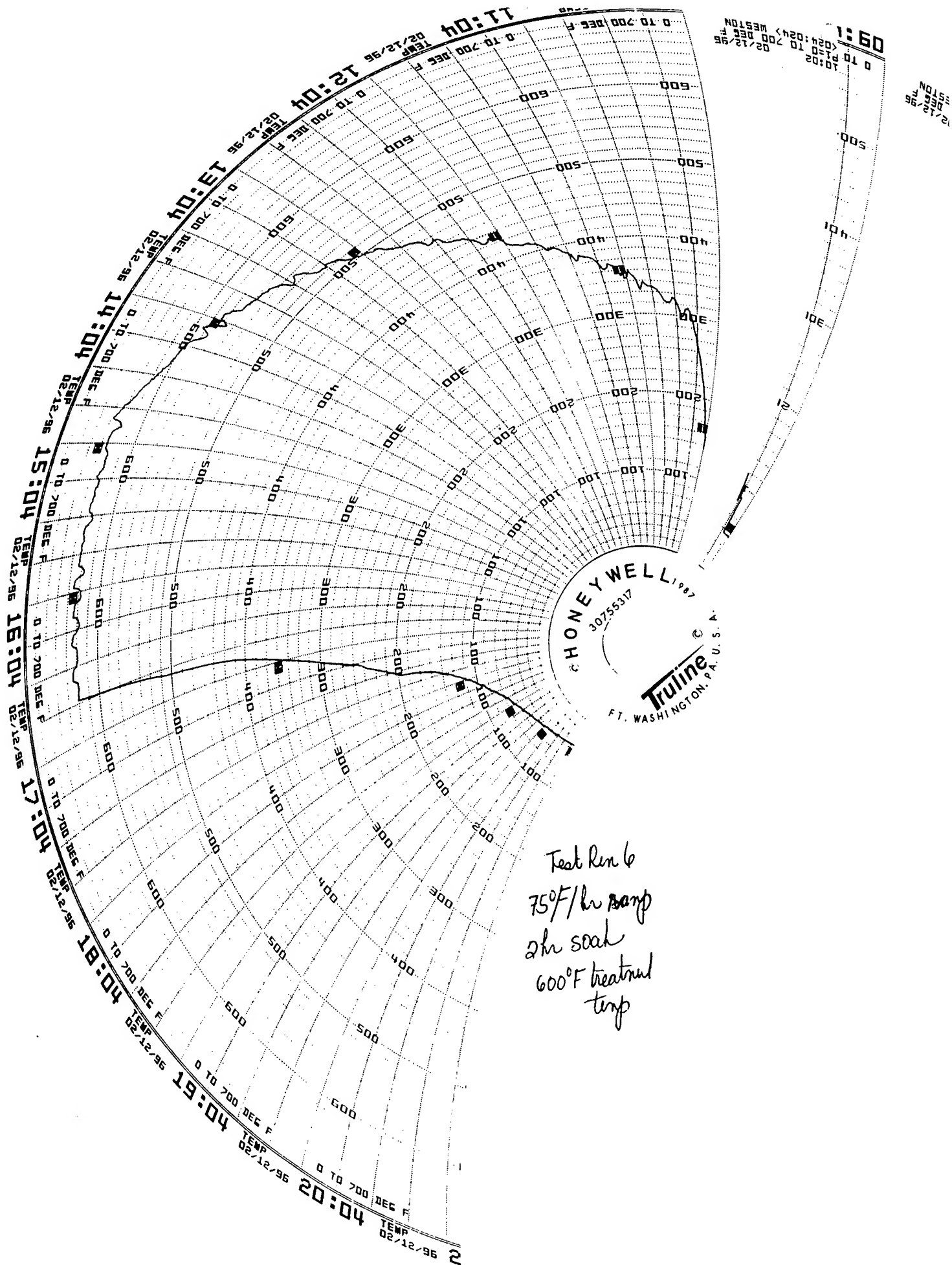
☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

☒ STOP "OXIDIZER" and "AIR BLOWER"

☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**





# Pre - START-UP (1 of 3)

Date: 13 FEB 96  
Time: \_\_\_\_\_

Test Number: #7

Ramp-Up Rate: 100°F/hr

Soak Time: 1 hr

Soak Temp: 600°F

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc. have been returned to a position capable of sustaining system operations.

## ELECTRICAL

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_ Afterburner I.D Fan (M-158)  
\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after all motors have been "BUMPED" to verify operations.

## Calibrate CEM

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx
- ☒ Stack SO2
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O2
- ☒ Stack CO

Tank Recorded Adjustment (Y/N)  
Values Values

|       |     |  |
|-------|-----|--|
| 75.6  | 75  |  |
| 30.4  | 30  |  |
| 75.6  | 75  |  |
| 126.4 | 126 |  |
| 30.4  | 30  |  |
| 123.1 | 123 |  |
| 5.97  | 6   |  |
| 127.6 | 123 |  |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

## Datalogger/Computer is ON

\_\_\_\_ Record Time (Computer Clock)  
\_\_\_\_ Record Ambient Temperature (TIT-300)  
\_\_\_\_ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

## Pre - Spike Activities

- ☒ Lock-out all Motors: Complete Exclusion Log
- ☒ Secure Equipment Pad and Access Road w/ Chains
- ☒ Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test Number \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

#1 Rack A's Characteristics. 600 LBS

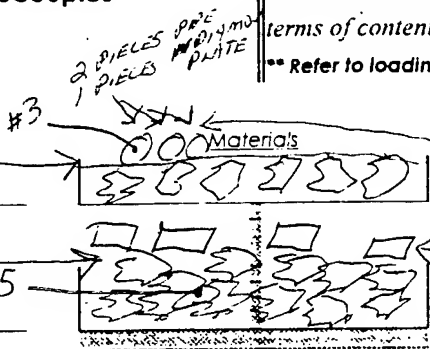
TOTAL BEFORE  
1500 LBS

| Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|-----------------|
| STEEL DEB         | 366 LBS         |
| 367 LBS           |                 |

TOTAL AFTER  
1496

| Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|-----------------|
| ROCK DEBRIS       | 354 LBS         |
| 367 LBS           |                 |

\*\* Secure pipe to prevent pipes from rolling

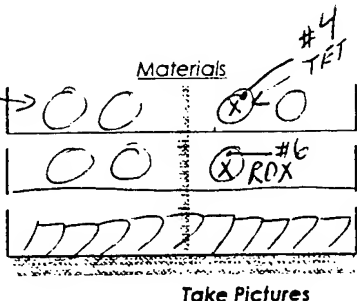


| Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|-----------------|
| STEEL PRE         | 73 LBS          |
| 73 LBS            |                 |
| CINDER BLOCK      | 93 LBS          |
| 93 LBS            |                 |

#2 Rack B's Characteristics. 430 LBS

TOTAL BEFORE  
1501  
AFTER  
1501

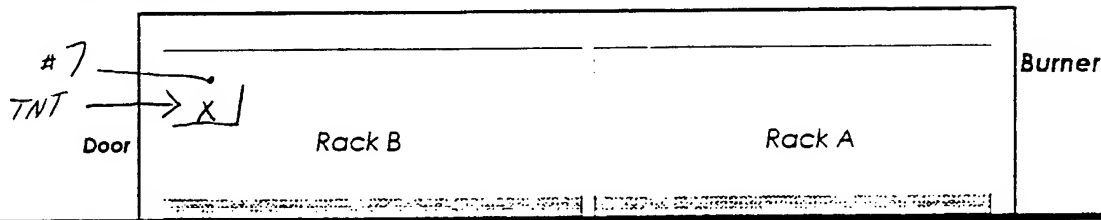
| Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|-----------------|
| 5" STL PRE        | 240 LBS         |
| 240 LBS           |                 |
| CLAY PRE          | 205 LBS         |
| 205 LBS           |                 |



| Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|-----------------|
| CINDER BLOCK      | 626 LBS         |
| 626 LBS           |                 |

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Piep, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



☐ Roll Calls and Close Furnace Door  
*Jim J. Kline*  
*[Signature]*

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: 13 FEB 96  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### AFTERBURNER START-UP

Initial and record time for each item.

- ☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC
- ☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC
- ☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☒ Start "DATALOGGER" Pushbuttons on the Computer.
- ☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 In. WC

@ 600 F: \_\_\_\_\_ :Time  
@ 1200 F: \_\_\_\_\_ :Time  
@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature  
1800°F and system draft @ < -0.5 In WC.

### FURNACE START-UP

Initial and record time for each item.

- ☒ Set Bleed Air Damper to 75%
- ☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC
- ☒ Set Controller to "MANUAL". Set controller output to 0.0
- ☒ Turn Furnace Key to "BURNER" Position.
- ☒ Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☒ Open Bleed Air Valve to 100%
- ☐ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust  
ID fan speed to maintain < -0.5 In. WC, afterburner temp @, 1800 Deg F, and furnace temp @, SOAK temperature.

- ☒ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

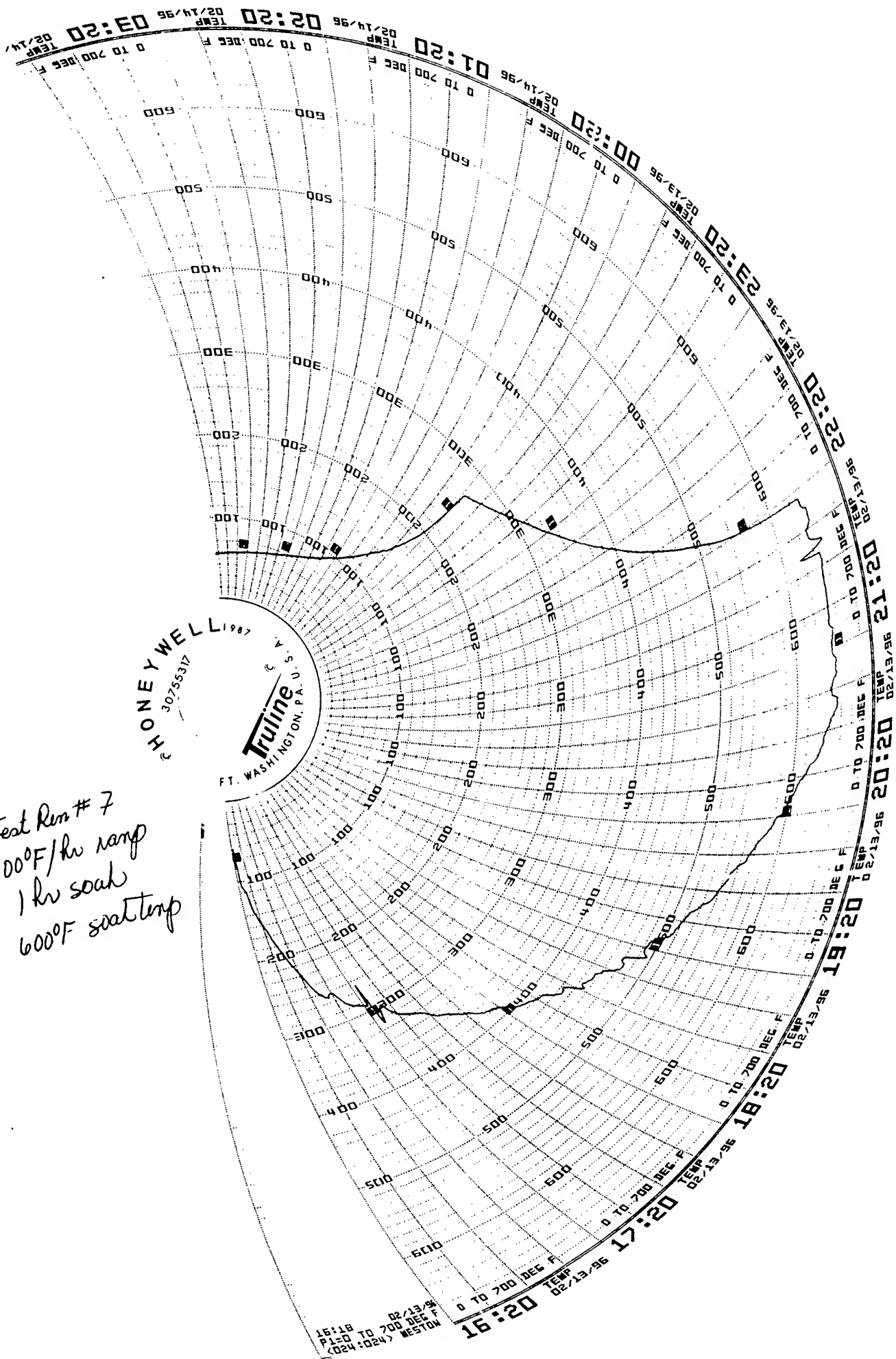
- ☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.
- ☐ STOP "OXIDIZER" and "AIR BLOWER"
- ☐ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**





Test Run # 7  
 100°F/hr ramp  
 1 hr soak  
 600°F soak temp



**Pre - START-UP (1 of 3)**Date: 14 FEB 96  
Time: \_\_\_\_\_Test Number: #8  
Ramp-Up Rate: 100°/Hr  
Soak Time: 2 Hr  
Soak Temp: 500°**MECHANICAL**

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

74%**ELECTRICAL**

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

- ☒ Furnace Combustion Blower (M-220)
- ☒ Afterburner Combustion Blower (M-130)
- ☒ Afterburner I.D Fan (M-158)
- ☒ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☒ **Calibrate CEM**

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx
- ☒ Stack SO2
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O2
- ☒ Stack CO

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

|       |       |   |
|-------|-------|---|
| 75.6  | 75    | N |
| 31.1  | 31    | Y |
| 75.6  | 75    | N |
| 126.4 | 126   | N |
| 31.1  | 31    | Y |
| 124.0 | 124.6 | Y |
| 5.97  | 6.0   | Y |
| 4.89  | 4.9   | Y |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

☒ **Datalogger/Computer is ON**

- Record Time (Computer Clock)
- Record Ambient Temperature (TIT-300)
- Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

☐ **Pre - Spike Activities**

- Lock-out all Motors; Complete Exclusion Log
- Secure Equipment Pad and Access Road w/ Chains
- Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Date: 15 FEB 96  
Time: \_\_\_\_\_

Test Number \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

#1 Rack A's Characteristics.

600 LBS

|        | Initial Wt. (lbs) | Final Wt. (lbs) | Materials | Initial Wt. (lbs) | Final Wt. (lbs) |
|--------|-------------------|-----------------|-----------|-------------------|-----------------|
| BEFORE | 1500 LBS          | 367 LBS         | STEEL DEB | PIPE              | 57 LBS          |
| AFTER  | 1483 LBS          | 351 LBS         | ROCK OFB  | CONCRETE BRICKS   | 109 LBS         |

\*\* Secure pipe to prevent pipes from rolling

Take Pictures

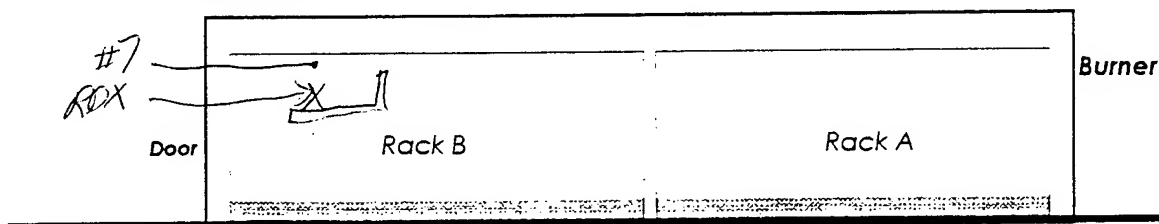
#2 Rack B's Characteristics.

|        | Initial Wt. (lbs) | Final Wt. (lbs) | Materials  | Initial Wt. (lbs) | Final Wt. (lbs) |
|--------|-------------------|-----------------|------------|-------------------|-----------------|
| BEFORE | 1501              | 240 LBS         | STEEL PIPE |                   |                 |
| AFTER  | 1501              | 205 LBS         | CLAY PIPE  | BRICKS            | 626             |

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



### ☐ Roll Calls and Close Furnace Door

Matthew M. Mulla  
Team 2 - Vindictive

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

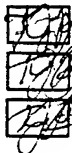
## START-UP (3 of 3)

Date: 15 Feb 96  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### AFTERBURNER START-UP

Initial and record time for each item.



Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC

Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC

Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.



Start "DATALOGGER" Pushbuttons on the Computer.

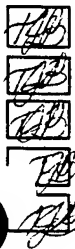
Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 In. WC

@ 600 F: \_\_\_\_\_ :Time  
@ 1200 F: \_\_\_\_\_ :Time  
@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature  
1800°F and system draft @ < -0.5 In WC.

### FURNACE START-UP

Initial and record time for each item.



Set Bleed Air Damper to 75%

Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC

Set Controller to "MANUAL". Set controller output to 0.0

Turn Furnace Key to "BURNER" Position.

Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.



Open Bleed Air Valve to 100%

Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust  
ID fan speed to maintain < -0.5 In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.



Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.



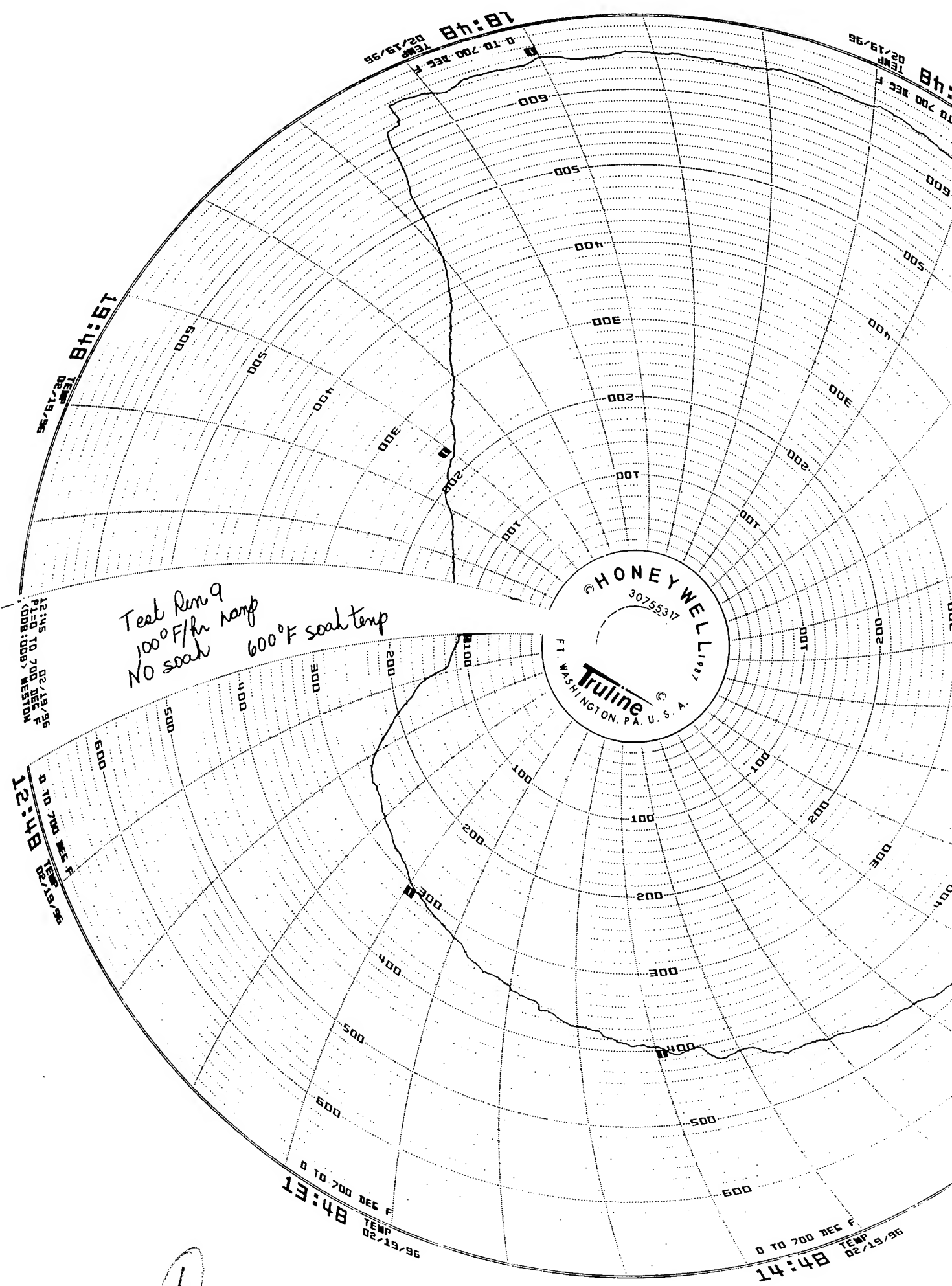
Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

STOP "OXIDIZER" and "AIR BLOWER"

STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**





Test Run 9  
100°F/hr ramp  
NO soak 600°F soak temp

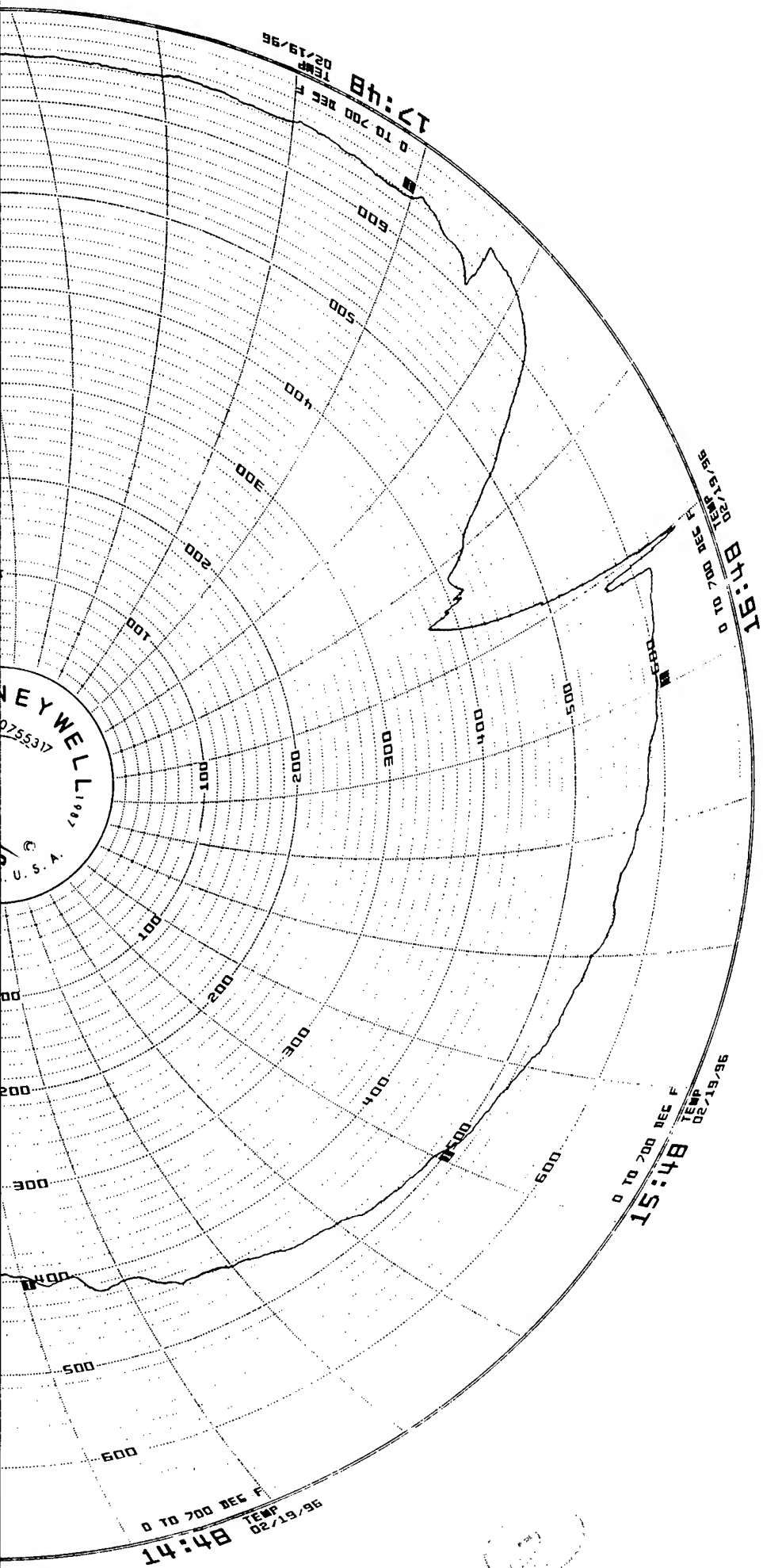
12:45 02/19/96  
P1-0 TO 700 DEC F  
(008:008) WESTDA

02/19/96  
8h:47  
0 TO 700 DEC F

02/19/96  
13:48  
0 TO 700 DEC F

02/19/96  
8h:47  
0 TO 700 DEC F

1



# Pre - START-UP (1 of 3)

Date: 19~~96~~ FEB 96  
Time: \_\_\_\_\_

Test Number: #9  
Ramp-Up Rate: 100°/Hr  
Soak Time: 0hr 0min  
Soak Temp: 600°

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc. have been returned to a position capable of sustaining system operations.

## ELECTRICAL

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

- ☒ Furnace Combustion Blower (M-220)
- ☒ Afterburner Combustion Blower (M-130)
- ☒ Afterburner I.D Fan (M-158)
- ☒ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after all motors have been "BUMPED" to verify operations.

## Calibrate CEM

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx
- ☒ Stack SO2
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O2
- ☒ Stack CO<sub>2</sub>

| Tank Values            | Recorded Values | Adjustment (Y/N) |
|------------------------|-----------------|------------------|
| 75.6                   | 75              | N                |
| 31.1                   | 31              | Y                |
| 75.6                   | 75              | Y                |
| 126.4                  | 125             | Y                |
| <del>124.0</del> 31.1  | 31              | Y                |
| <del>124.0</del> 124.0 | 124.0           | Y                |
| 5.97                   | 6.0             | Y                |
| <del>4.89</del> 4.89   | 4.9             | N                |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

## Datalogger/Computer is ON

- ☐ Record Time (Computer Clock)
- ☐ Record Ambient Temperature (TIT-300)
- ☐ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

## Pre - Spike Activities

- ☒ Lock-out all Motors; Complete Exclusion Log
- ☒ Secure Equipment Pad and Access Road w/ Chains
- ☒ Spike Test Materials and Furnace Test Plates



# LOADING/UNLOADING (2 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test Number #9  
Ramp-Up Rate: 100°/Hr  
Soak Time: 0 hrs  
Soak Temp: 600°

## FIELD ACTIVITIES

Initial each item.

### #1 Load Furnace with Materials and Thermocouples

For each rack bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

#1 Rack A's Characteristics.  
600 LBS

|              | Initial Wt. (lbs) | Final Wt. (lbs) |
|--------------|-------------------|-----------------|
| BEFORE 1500  |                   |                 |
| AFTER 1481   |                   |                 |
| STEEL PIPE   | 100 LBS           | 96 LBS          |
| CONCRETE DEB | 367 LBS           | 367 LBS         |
| CINDER BLOCK | 66 LBS            | 66 LBS          |

\*\* Secure pipe to prevent pipes from rolling

Take Pictures

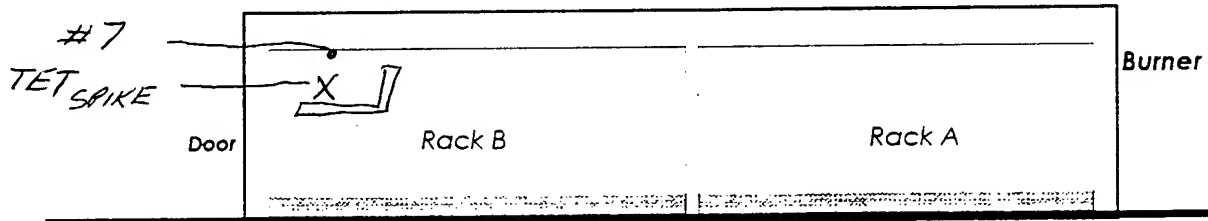
#2 Rack B's Characteristics.  
430 LBS

|                 | Initial Wt. (lbs) | Final Wt. (lbs) |
|-----------------|-------------------|-----------------|
| BEFORE 1501 LBS |                   |                 |
| AFTER 1502      |                   |                 |
| STEEL PIPE      | 240 LBS           | 240 LBS         |
| CLAY PIPE       | 205 LBS           | 205 LBS         |
| TNT             |                   |                 |
| CINDER BLOCKS   | 626 LBS           | 626 LBS         |

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### Mark Locations of Thermocouples



### Roll Calls and Close Furnace Door

Mark Muller  
Kevin Klondike

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### AFTERBURNER START-UP

Initial and record time for each item.

- ☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft  $< -0.5$  In. WC
- ☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain  $< -0.5$  In. WC
- ☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain  $< -0.5$  In. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☐ Start "DATALOGGER" Pushbuttons on the Computer.
- ☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain  $< -0.5$  In. WC

@ 600 F: \_\_\_\_\_ :Time  
@ 1200 F: \_\_\_\_\_ :Time  
@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature  
1800°F and system draft @  $< -0.5$  In WC.

### FURNACE START-UP

Initial and record time for each item.

- ☒ Set Bleed Air Damper to 75%
- ☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain  $< -0.5$  In. WC
- ☒ Set Controller to "MANUAL". Set controller output to 0.0
- ☒ Turn Furnace Key to "BURNER" Position.
- ☒ Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☒ Open Bleed Air Valve to 100%
- ☒ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust  
ID fan speed to maintain  $< -0.5$  In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.

- ☒ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

- ☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.
- ☒ STOP "OXIDIZER" and "AIR BLOWER"
- ☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**



**Pre - START-UP (1 of 3)**

Date: 20 FEB 96  
Time: \_\_\_\_\_

Test Number: #10Ramp-Up Rate: 150°/HrSoak Time: 1 HrSoak Temp: 550°**MECHANICAL**

Initial each item.

- ☒ Inspection doors/manways are SECURED  
☒ Gas Valves OPEN  
☒ View/Inspection Ports CLOSED  
☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

71%**ELECTRICAL**

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.  
☒ Furnace and Afterburner Control Breakers are ON.  
☒ Verify Emergency Pushbuttons are NOT ENGAGED.  
☒ BUMP Motors and switch to "AUTO"

\_\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_\_ Afterburner I.D Fan (M-158)  
\_\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☒ **Calibrate CEM**

- ☒ Interconnecting Duct - NOx  
☒ Interconnecting Duct - THC  
☒ Stack NOx  
☒ Stack SO2  
☒ Stack THC  
☒ Stack CO  
☒ Stack O2  
☒ Stack CO2

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

|       |       |   |
|-------|-------|---|
| 75.6  | 75    | Y |
| 31.1  | 31    | Y |
| 75.6  | 75    | N |
| 126.4 | 126   | Y |
| 31.1  | 31    | Y |
| 124.0 | 124.6 | N |
| 5.97  | 6.0   | Y |
| 4.89  | 4.9   | Y |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

☒ **Datalogger/Computer is ON**

\_\_\_\_\_ Record Time (Computer Clock)  
\_\_\_\_\_ Record Ambient Temperature (TIT-300)  
\_\_\_\_\_ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

☒ **Pre - Spike Activities**

\_\_\_\_\_ Lock-out all Motors; Complete Exclusion Log  
\_\_\_\_\_ Secure Equipment Pad and Access Road w/ Chains  
\_\_\_\_\_ Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Date: FEB FEB 96  
Time: \_\_\_\_\_

Test Number #10  
Ramp-Up Rate: 150°/Hr  
Soak Time: 1 Hr  
Soak Temp: 550°

## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack/bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

#1 Rack A's Characteristics.  
RACK 600LB

| BEFORE | Initial Wt. (lbs)   | Final Wt. (lbs) | Materials          | Initial Wt. (lbs) | Final Wt. (lbs) |
|--------|---------------------|-----------------|--------------------|-------------------|-----------------|
| 1500   |                     |                 |                    |                   |                 |
| AFTER  | <u>STEEL PIPE</u>   | <u>33 LBS</u>   | <u>STEEL PIPE</u>  | <u>367 LBS</u>    | <u>364 LBS</u>  |
| 1473   | <u>33 LBS</u>       |                 |                    |                   |                 |
|        | <u>CINDER BLOCK</u> | <u>128 LBS</u>  | <u>ROCK DEBRIS</u> | <u>367 LBS</u>    | <u>348</u>      |
|        | <u>133 LBS</u>      |                 |                    |                   |                 |

\*\* Secure pipe to prevent pipes from rolling  
Take Pictures

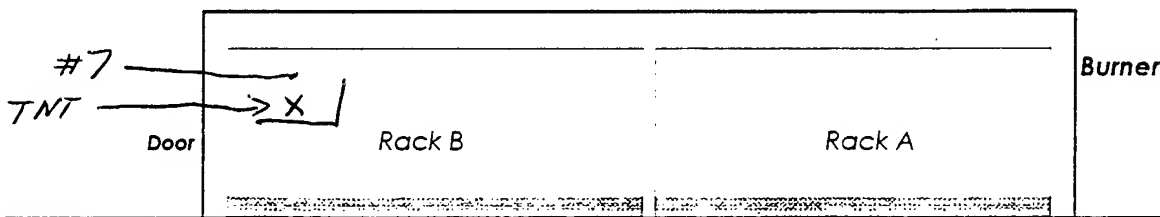
#2 Rack B's Characteristics.

| BEFORE | Initial Wt. (lbs) | Final Wt. (lbs)  | Materials           | Initial Wt. (lbs) | Final Wt. (lbs)   |
|--------|-------------------|------------------|---------------------|-------------------|-------------------|
| 1501   |                   |                  |                     |                   |                   |
| AFTER  | <u>CLAY PIPE</u>  | <u>CLAY PIPE</u> | <u>STEEL PIPE</u>   | <u>240 LBS</u>    | <u>STEEL PIPE</u> |
| 1501   | <u>205 LBS</u>    | <u>205 LBS</u>   | <u>RDX</u>          | <u>626 LBS</u>    | <u>627 LBS</u>    |
|        |                   |                  | <u>CINDER BLOCK</u> |                   |                   |

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



### ☐ Roll Calls and Close Furnace Door

Kevin Z. Klondick  
Matthew Mulley

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test #10  
Rmp-Up <sup>Rate</sup> Time: 150°/Hr  
Soak Time: 1 Hr  
Soak Temp: 550°

### AFTERBURNER START-UP

Initial and record time for each item.

- ☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC
- ☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC
- ☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☒ Start "DATALOGGER" Pushbuttons on the Computer.
- ☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 In. WC

@ 600 F: \_\_\_\_\_ :Time  
@ 1200 F: \_\_\_\_\_ :Time  
@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature  
1800°F and system draft @ < -0.5 In WC.

### FURNACE START-UP

Initial and record time for each item.

- ☒ Set Bleed Air Damper to 75%
- ☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC
- ☒ Set Controller to "MANUAL". Set controller output to 0.0
- ☒ Turn Furnace Key to "BURNER" Position.
- ☒ Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☒ Open Bleed Air Valve to 100%
- ☒ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust  
ID fan speed to maintain < -0.5 In. WC, afterburner temp @, 1800 Deg F, and furnace temp @, SOAK temperature.

- ☒ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

- ☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.
- ☒ STOP "OXIDIZER" and "AIR BLOWER"
- ☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

## HOURLY DATALOG ( \_ of \_ )

Date: 20 FEB. 96

**Time:**

Test Number: 77 10

Ramp-Up Rate:  $150^{\circ}\text{F/hr}$

Sent Time: 1 hr.

Seat Temp: 550° F

| Tag | Description | Unit | 1900 | 2000 | 2100 | 2200 | 2300 | 2400 | 0100 |  |  |  |  |  |  |  |  |  |  |
|-----|-------------|------|------|------|------|------|------|------|------|--|--|--|--|--|--|--|--|--|--|
|-----|-------------|------|------|------|------|------|------|------|------|--|--|--|--|--|--|--|--|--|--|

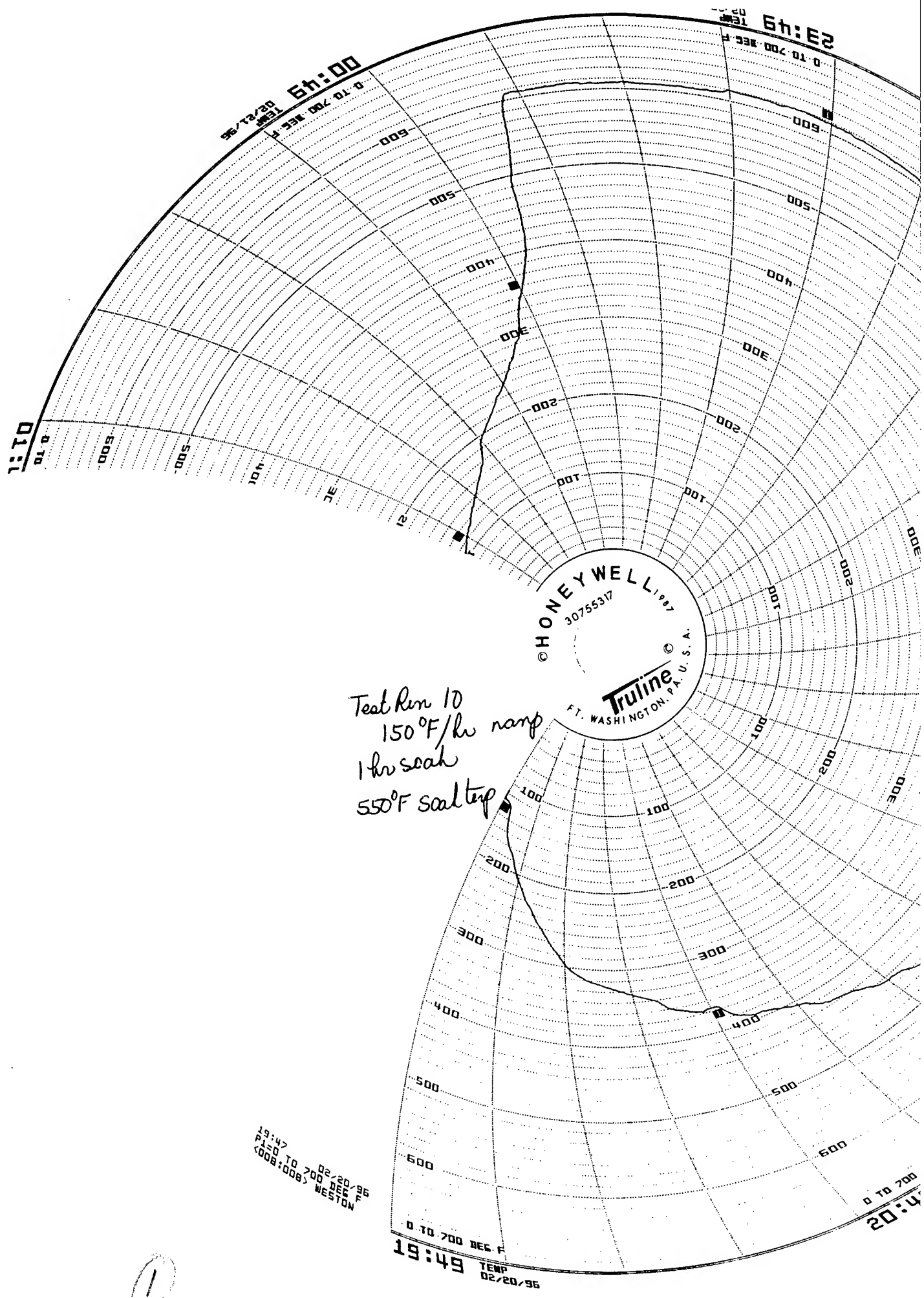
**Time:**

**FURNACE**

[illegible]

## AFTERBURNER

[illegible]**CEM**[illegible]



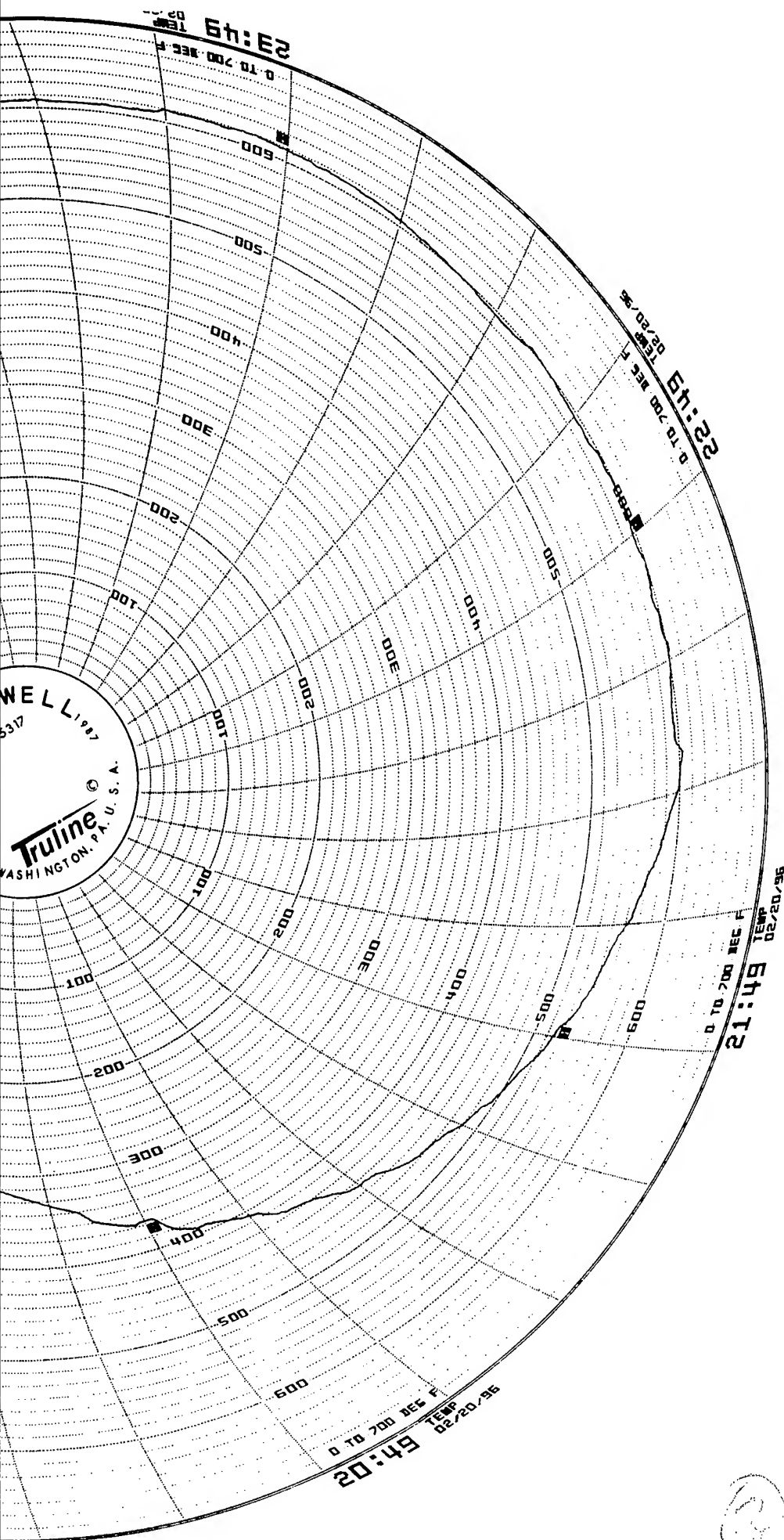
Test Run 10  
150°F/hr ramp  
1 hr soak  
550°F soak temp

19:40  
PLSD TO 700 DEG F  
<008:008> 02/20/96  
WESTON

19:49  
TEMP  
02/20/96

1





**Pre - START-UP (1 of 3)**Date: 22 FEB 96

Time: \_\_\_\_\_

Test Number: #11Ramp-Up Rate: 150°F/Hr.Soak Time: 1 Hr.Soak Temp: 400°F**MECHANICAL**

Initial each item.

☒ **Inspection doors/manways are SECURED**☒ **Gas Valves OPEN**☒ **View/Inspection Ports CLOSED**☒ **Record Gas (Propane) Valve Position**

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

**ELECTRICAL**

Initial each item.

☒ **All Lockout/Tagouts (1-5) are ACCOUNTED.**☒ **Furnace and Afterburner Control Breakers are ON.**☒ **Verify Emergency Pushbuttons are NOT ENGAGED.**☒ **BUMP Motors and switch to "AUTO"**

\_\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_\_ Afterburner I.D. Fan (M-158)  
\_\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☐ **Calibrate CEM**

\_\_\_\_\_ Interconnecting Duct - NOx  
\_\_\_\_\_ Interconnecting Duct - THC  
\_\_\_\_\_ Stack NOx  
\_\_\_\_\_ Stack SO<sub>2</sub>  
\_\_\_\_\_ Stack THC  
\_\_\_\_\_ Stack CO  
\_\_\_\_\_ Stack O<sub>2</sub>  
\_\_\_\_\_ Stack CO

| Tank<br>Values | Recorded<br>Values | Adjustment (Y/N) |
|----------------|--------------------|------------------|
|----------------|--------------------|------------------|

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

☒ **Datalogger/Computer is ON**1001 Record Time (Computer Clock)71.1 Record Ambient Temperature (TIT-300)67.4% Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)☒ **Pre - Spike Activities**

\_\_\_\_\_ Lock-out all Motors; Complete Exclusion Log  
\_\_\_\_\_ Secure Equipment Pad and Access Road w/ Chains  
\_\_\_\_\_ Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Date: 21 FEB 96  
Time: \_\_\_\_\_

Test Number \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

**#1 Rack A's Characteristics.**

| Initial Wt. (lbs) | Final Wt. (lbs)     | Materials     | Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|---------------------|---------------|-------------------|-----------------|
| BEFORE 1500       | 600 LBS             |               |                   |                 |
| AFTER 1470        | PIPE 66 LBS         | STEEL DEBRIS  | 371 LBS           |                 |
|                   | CINDER BLOCK 98 LBS | ROCK DEBRIS   | 354 LBS           |                 |
|                   | 100 LBS             | Empty RACK WT | 354 LBS           |                 |

\*\* Secure pipe to prevent pipes from rolling

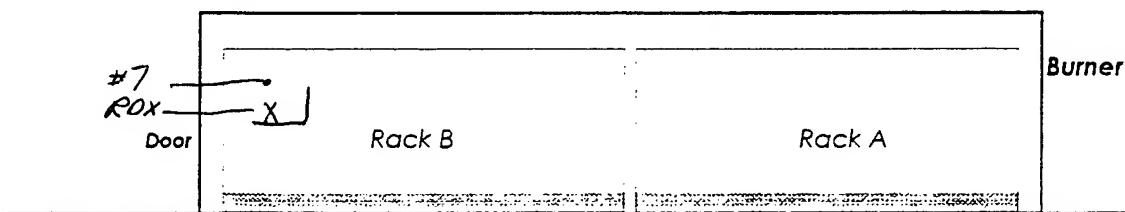
**#2 Rack B's Characteristics.**

| Initial Wt. (lbs) | Final Wt. (lbs)    | Materials     | Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|--------------------|---------------|-------------------|-----------------|
| BEFORE 1501       | 430 LBS            |               |                   |                 |
| TER 1470          | STEEL PIPE 240 LBS | TNT           |                   |                 |
| 1501              | CLAY PIPE 205 LBS  | CINDER BLOCK  | 627 LBS           |                 |
|                   | CLAY PIPE 205 LBS  | Cinder Blocks | 626 LBS           |                 |

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



### ☐ Roll Calls and Close Furnace Door

Room 2 - Klondike  
Maxwell Marbury

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_

Soak Time: \_\_\_\_\_

Soak Temp: \_\_\_\_\_

### AFTERBURNER START-UP

Initial and record time for each item.

☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC

☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC

☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

☒ Start "DATALOGGER" Pushbuttons on the Computer.

☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 In. WC

@ 600 F: \_\_\_\_\_ :Time

@ 1200 F: \_\_\_\_\_ :Time

@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature 1800°F and system draft @ < -0.5 In WC.

### FURNACE START-UP

Initial and record time for each item.

☒ Set Bleed Air Damper to 75%

☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC

☒ Set Controller to "MANUAL". Set controller output to 0.0

☒ Turn Furnace Key to "BURNER" Position.

☒ Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

☒ Open Bleed Air Valve to 100%

☒ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain < -0.5 In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.

☒ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

☐ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

☐ STOP "OXIDIZER" and "AIR BLOWER"

☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

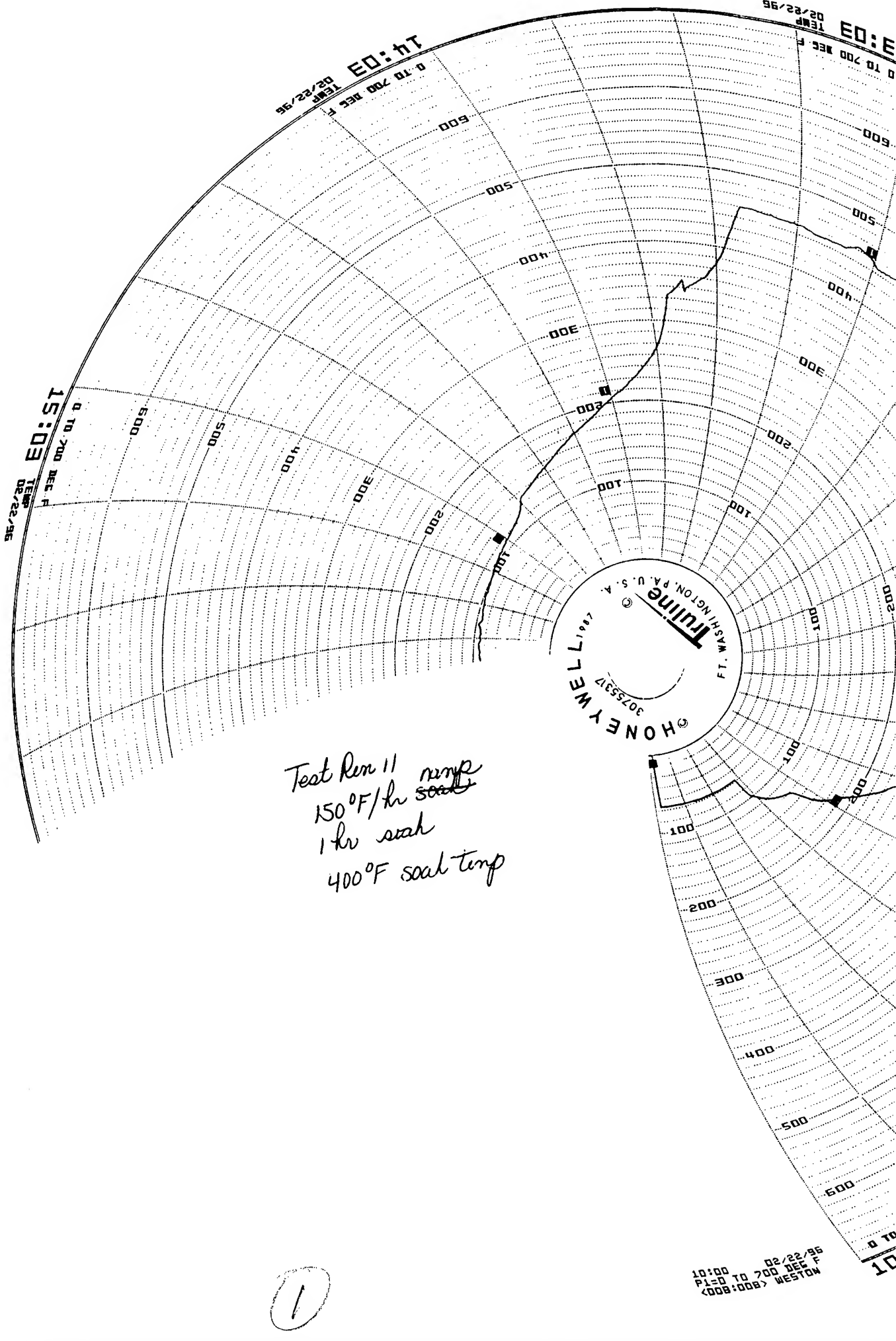
**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**



15:03  
0 TO 700 DEG F  
TEMP  
02/22/96

ED:4T  
0 TO 700 DEG F  
TEMP  
02/22/96

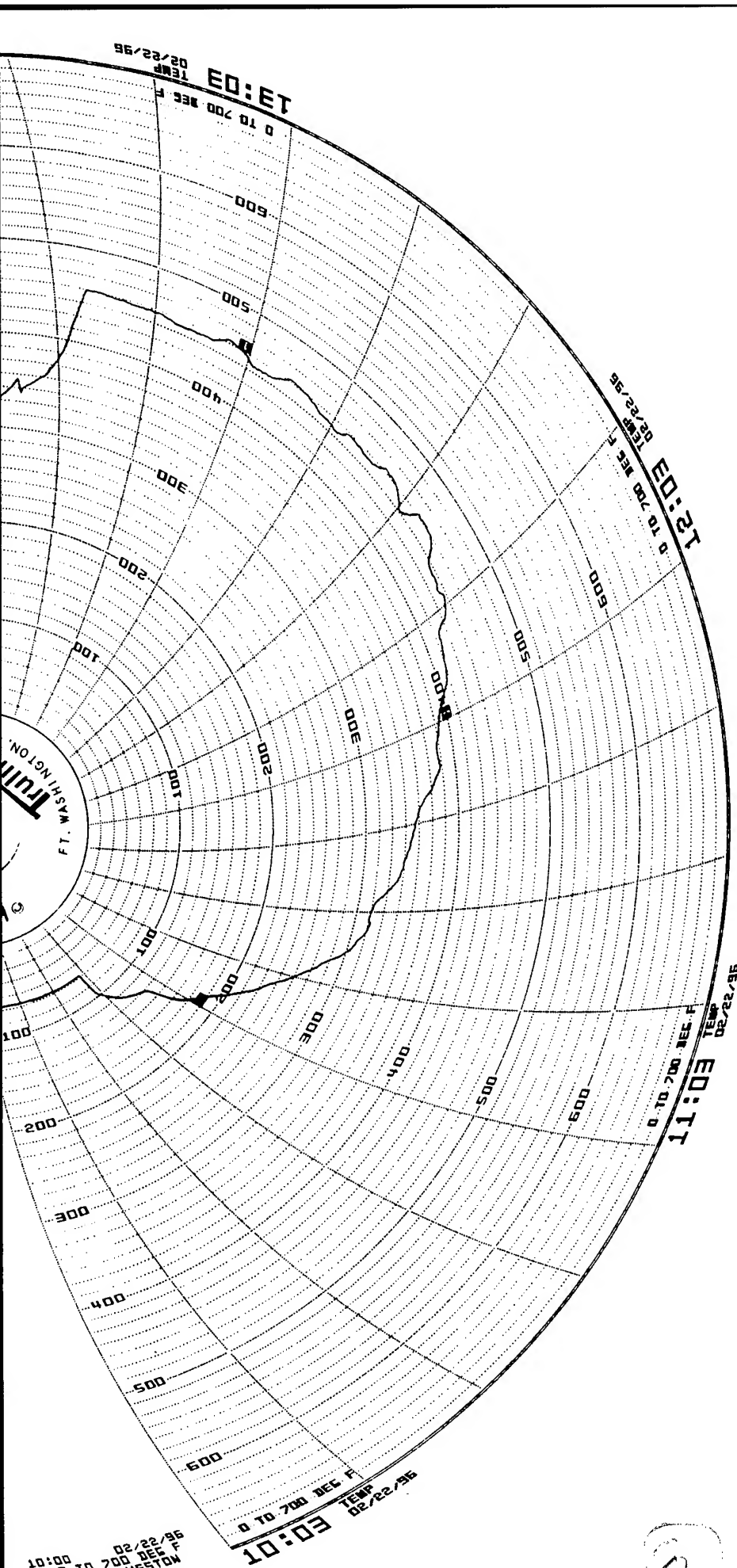
ED:6  
0 TO 700 DEG F  
TEMP  
02/22/96



Test Run 11 ramp  
150°F/hr soak  
1 hr soak  
400°F soak temp

10:00 02/22/96  
P1=0 TO 700 DEG F  
<008:008> WESTON

1



2

**Pre - START-UP (1 of 3)**

Date: 26 FEB 96  
Time: \_\_\_\_\_

Test Number: #12Ramp-Up Rate: 200°F/hrSoak Time: 1hrSoak Temp: 300°F**MECHANICAL**

Initial each item.

☒ **Inspection doors/manways are SECURED**☒ **Gas Valves OPEN**☒ **View/Inspection Ports CLOSED**☒ **Record Gas (Propane) Valve Position**

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

**ELECTRICAL**

Initial each item.

☒ **All Lockout/Tagouts (1-5) are ACCOUNTED.**☒ **Furnace and Afterburner Control Breakers are ON.**☒ **Verify Emergency Pushbuttons are NOT ENGAGED.**☒ **BUMP Motors and switch to "AUTO"**

\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_ Afterburner I.D Fan (M-158)  
\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☒ **Calibrate CEM**

☒ Interconnecting Duct - NOx  
☒ Interconnecting Duct - THC  
☒ Stack NOx  
☒ Stack SO2  
☒ Stack THC  
☒ Stack CO  
☒ Stack O2  
☒ Stack CO<sub>2</sub>

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

|       |       |   |
|-------|-------|---|
| 75.6  | 76    | Y |
| 30.1  | 31    | N |
| 75.6  | 74    | Y |
| 126.4 | 126   | Y |
| 30.1  | 31    | N |
| 124   | 124.8 | Y |
| 5.97  | 5.7   | Y |
| 4.89  | 5.0   | Y |

**\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED**

☒ **Datalogger/Computer is ON**

☒ Record Time (Computer Clock)  
☒ Record Ambient Temperature (TIT-300)  
☒ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

☒ **Pre - Spike Activities**

☒ Lock-out all Motors; Complete Exclusion Log  
☒ Secure Equipment Pad and Access Road w/ Chains  
☒ Spike Test Materials and Furnace Test Plates



## LOADING/UNLOADING (2 of 3)

Date: 26 FEB 94  
Time: \_\_\_\_\_

Test Number #12  
Ramp-Up Rate: 200°F/hr.  
Soak Time: 1 hr  
Soak Temp: 300°F

### FIELD ACTIVITIES

Initial each item.

#### ☐ Load Furnace with Materials and Thermocouples

For each rack bin, provide a description in terms of contents, appearance, moisture, etc.

\*\* Refer to loading procedures for instructions.

**#1 Rack A's Characteristics.**  
600 LBS

|                 | Initial Wt. (lbs)   | Final Wt. (lbs) |
|-----------------|---------------------|-----------------|
| BEFORE 1500 LBS | STEEL DEB 367 LBS   | 366 LBS         |
| AFTER 1492 LBS  | ROCK DEBRIS 367 LBS | 360 LBS         |

\*\* Secure pipe to prevent pipes from rolling

**#5** Initial Wt. (lbs) Final Wt. (lbs)  
PIPE 69 LBS 69 LBS

**#4** Initial Wt. (lbs) Final Wt. (lbs)  
CINDER BLOCK 97 LBS 97 LBS

Take Pictures

**#2 Rack B's Characteristics.**  
430 LBS

|                 | Initial Wt. (lbs)  | Final Wt. (lbs) |
|-----------------|--------------------|-----------------|
| BEFORE 1500 LBS | STEEL PIPE 240 LBS | 240 LBS         |
| AFTER 1500 LBS  | CLAY PIPE 204 LBS  | 204 LBS         |

**#3** Initial Wt. (lbs) Final Wt. (lbs)  
ROX

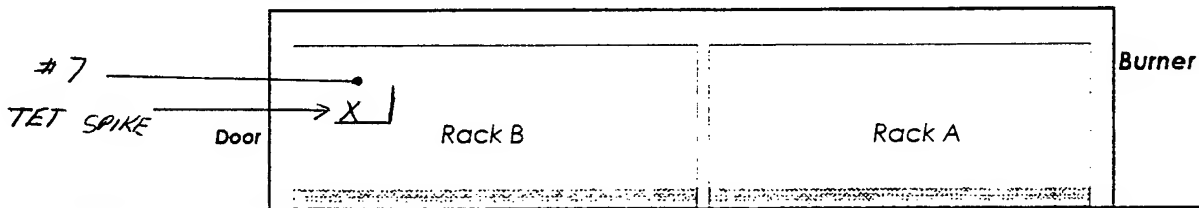
**#6** Initial Wt. (lbs) Final Wt. (lbs)  
TNT

**#6** Initial Wt. (lbs) Final Wt. (lbs)  
CINDER BLOCKS 626 LBS 626 LBS

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

#### ☐ Mark Locations of Thermocouples



#### ☐ Roll Calls and Close Furnace Door

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

#### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: 26 FEB 96  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### AFTERBURNER START-UP

Initial and record time for each item.



Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC



Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC



Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.



Start "DATALOGGER" Pushbuttons on the Computer.



Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 In. WC

@ 600 F: \_\_\_\_\_ :Time

@ 1200 F: \_\_\_\_\_ :Time

@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature 1800°F and system draft @ < -0.5 In WC.

### FURNACE START-UP

Initial and record time for each item.



Set Bleed Air Damper to 75%



Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC



Set Controller to "MANUAL". Set controller output to 0.0



Turn Furnace Key to "BURNER" Position.



Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.



Open Bleed Air Valve to 100%



Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.

Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain < -0.5 In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.



Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.



Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.



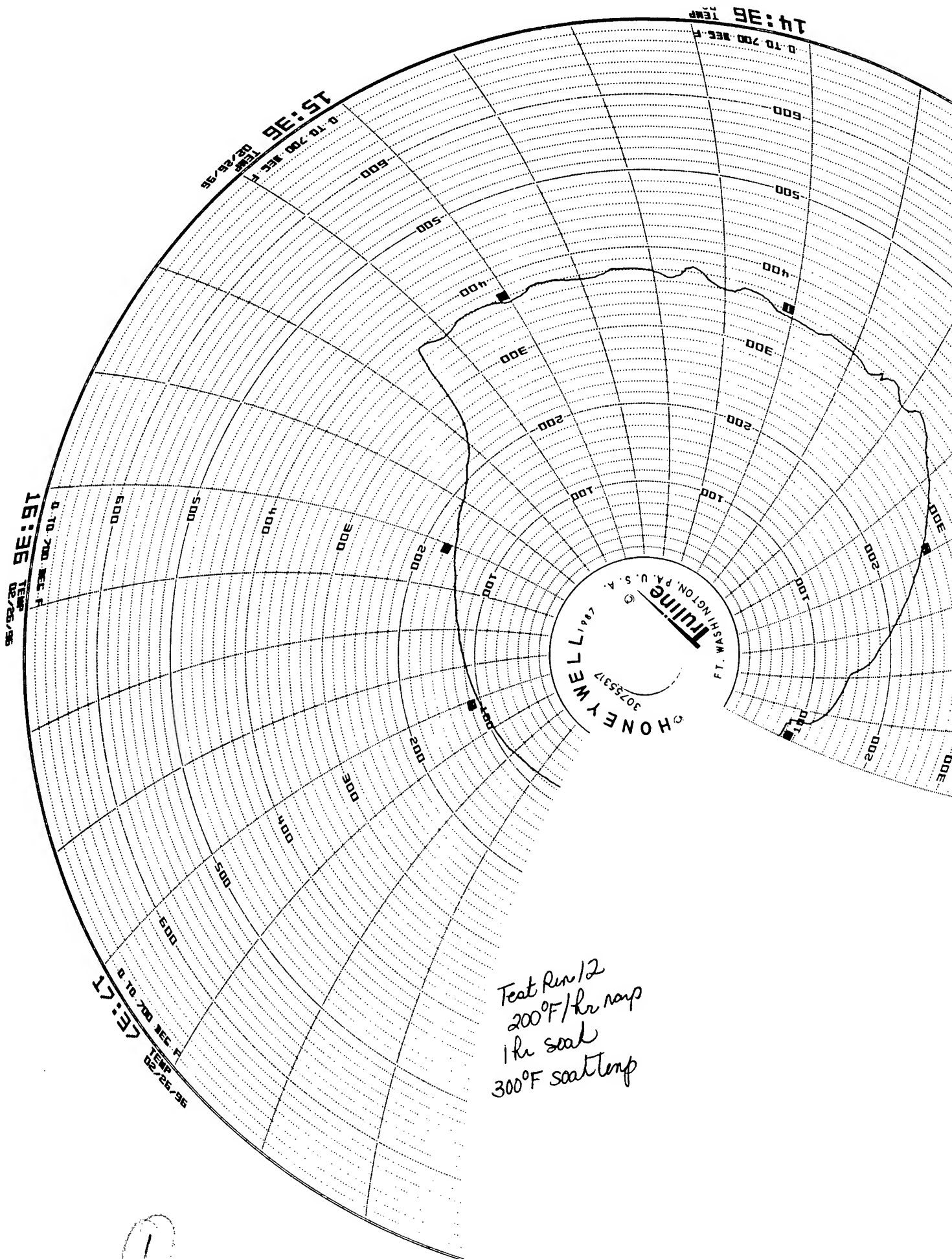
STOP "OXIDIZER" and "AIR BLOWER"



STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**







**Pre - START-UP (1 of 3)**Date: 26 FEB 96  
Time: \_\_\_\_\_Test Number: #13Ramp-Up Rate: 200°F/hrSoak Time: 1 hrSoak Temp: 500°F**MECHANICAL**

Initial each item.

☒ Inspection doors/manways are SECURED☒ Gas Valves OPEN☒ View/Inspection Ports CLOSED☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

**ELECTRICAL**

Initial each item.

☒ All Lockout/Tagouts (1-5) are ACCOUNTED.☒ Furnace and Afterburner Control Breakers are ON.☒ Verify Emergency Pushbuttons are NOT ENGAGED.☒ BUMP Motors and switch to "AUTO"

- ☒ Furnace Combustion Blower (M-220)
- ☒ Afterburner Combustion Blower (M-130)
- ☒ Afterburner I.D Fan (M-158)
- ☒ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☒ Calibrate CEM

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx
- ☒ Stack SO<sub>2</sub>
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O<sub>2</sub>
- ☒ Stack CO<sub>2</sub>

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

|       |       |   |
|-------|-------|---|
| 75.1  | 74    | ✓ |
| 30.1  | 32    | ✓ |
| 75.6  | 78    | ✓ |
| 124.4 | 124   | ✓ |
| 30.1  | 31    | ✓ |
| 124   | 123.6 | ✓ |
| 5.97  | 5.6   | ✓ |
| 4.84  | 4.9   | ✓ |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

☒ Datalogger/Computer is ON

- ☒ Record Time (Computer Clock)
- ☒ Record Ambient Temperature (TIT-300)
- ☒ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

☒ Pre - Spike Activities

- ☒ Lock-out all Motors: Complete Exclusion Log
- ☒ Secure Equipment Pad and Access Road w/ Chains
- ☒ Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test Number \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack/bin, provide a description in terms of contents, appearance, moisture, etc.

\*\* Refer to loading procedures for instructions.

**#1 Rack A's Characteristics.**

|                 | Initial Wt. (lbs) | Final Wt. (lbs) |
|-----------------|-------------------|-----------------|
| BEFORE 1500 LBS | 600 LBS           |                 |
| AFTER 1482      | 367 LBS           | 365 LBS         |
| STEEL DEB       |                   |                 |
| ROCK DEB        |                   | 357 LBS         |

**#5**

|              | Initial Wt. (lbs) | Final Wt. (lbs) |
|--------------|-------------------|-----------------|
| PIPE         | 42 LBS            | 42 LBS          |
| CINDER BLOCK | 124 LBS           | 122 LBS         |

**#2 Rack B's Characteristics.**

|                 | Initial Wt. (lbs) | Final Wt. (lbs) |
|-----------------|-------------------|-----------------|
| BEFORE 1500 LBS | 430 LBS           |                 |
| AFTER 1497      | 240 LBS           | 240 LBS         |
| STEEL PIPE      |                   | 240 LBS         |
| CLAY PIPE       |                   | 204 LBS         |
| ROX             |                   | 626 LBS         |

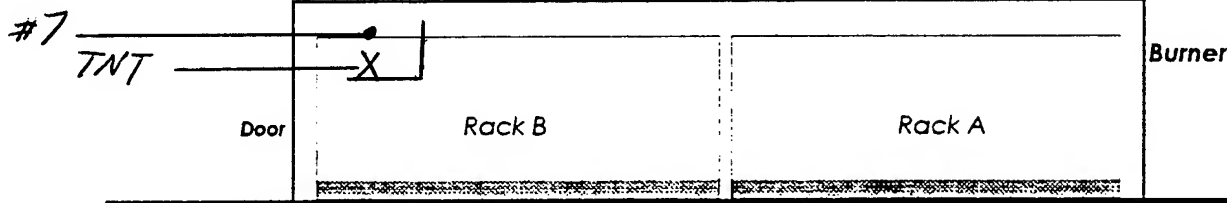
**#6 TET**

|              | Initial Wt. (lbs) | Final Wt. (lbs) |
|--------------|-------------------|-----------------|
| CINDER BLOCK | 623 LBS           |                 |

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



### ☐ Roll Calls and Close Furnace Door

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### TERBURNER START-UP

Initial and record time for each item.



Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC



Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain <-0.5 In.WC



Start "OXIDIZER" (Burner). Adjust fan speed to maintain <-0.5 In.WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.



Start "DATALOGGER" Pushbuttons on the Computer.



Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 In.WC

@ 600 F: \_\_\_\_\_:Time

@ 1200 F: \_\_\_\_\_:Time

@ 1800F: \_\_\_\_\_:Time

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature 1800°F and system draft @ <-0.5 In WC.

### FURNACE START-UP

Initial and record time for each item.



Set Bleed Air Damper to 75%



Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain <-0.5 In.WC



Set Controller to "MANUAL". Set controller output to 0.0



Turn Furnace Key to "BURNER" Position.



Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.



Open Bleed Air Valve to 100%



Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain <-0.5 In.WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.



Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.



Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.



STOP "OXIDIZER" and "AIR BLOWER"



STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**



Date: 26 FEB 96  
Time:

Test Number: #13  
Ramp-Up Rate: 200°F/hr  
Soak Time: 1 hr  
Soak Temp: 500°F

| Tag              | Description | Unit |
|------------------|-------------|------|
| D900             | 1060        | 116D |
| 12 <del>12</del> | 15          |      |

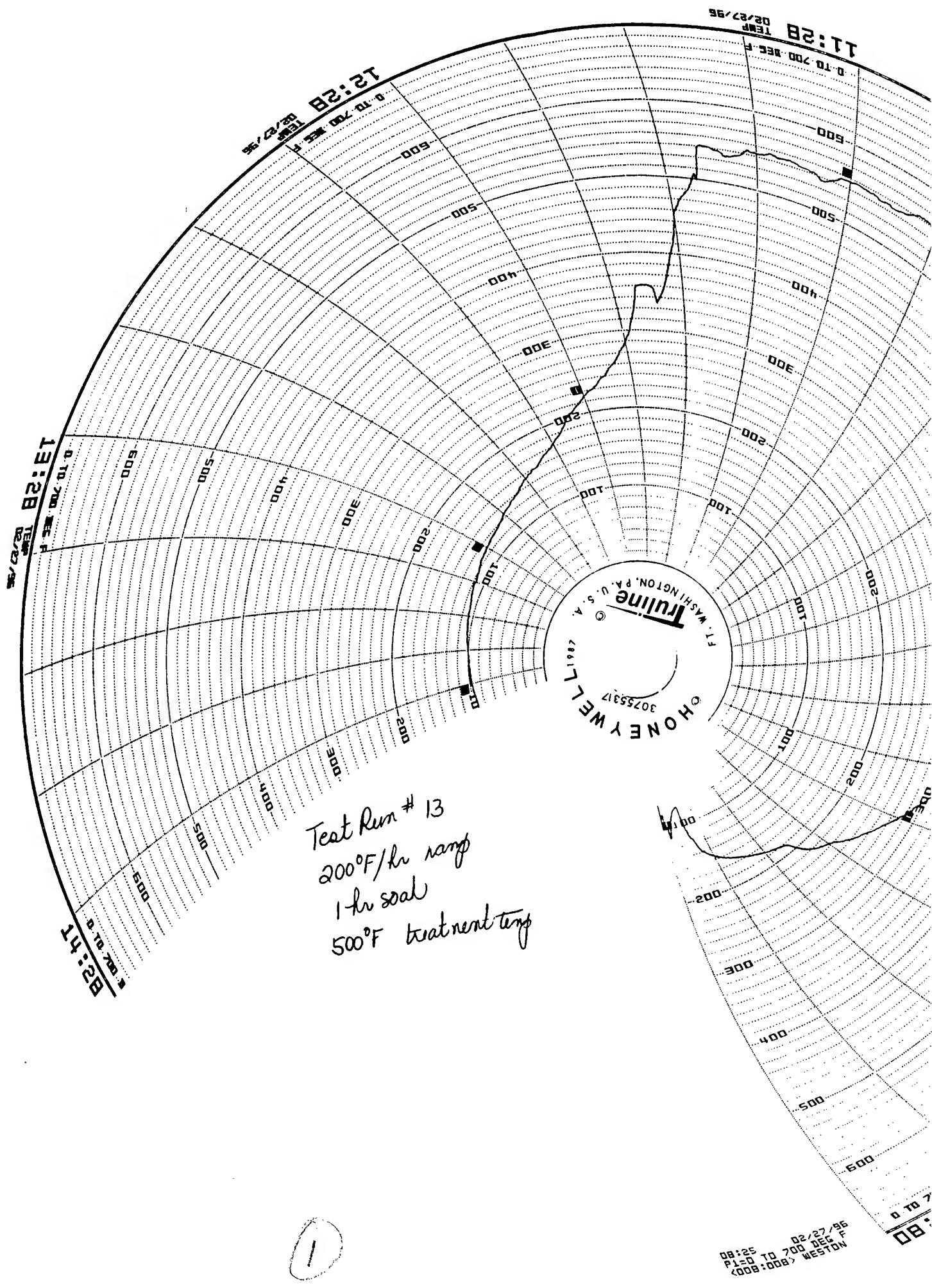
**Time:**

## FURNACE

[illegible]

## AFTERBURNER

[illegible]**GEM**[illegible]

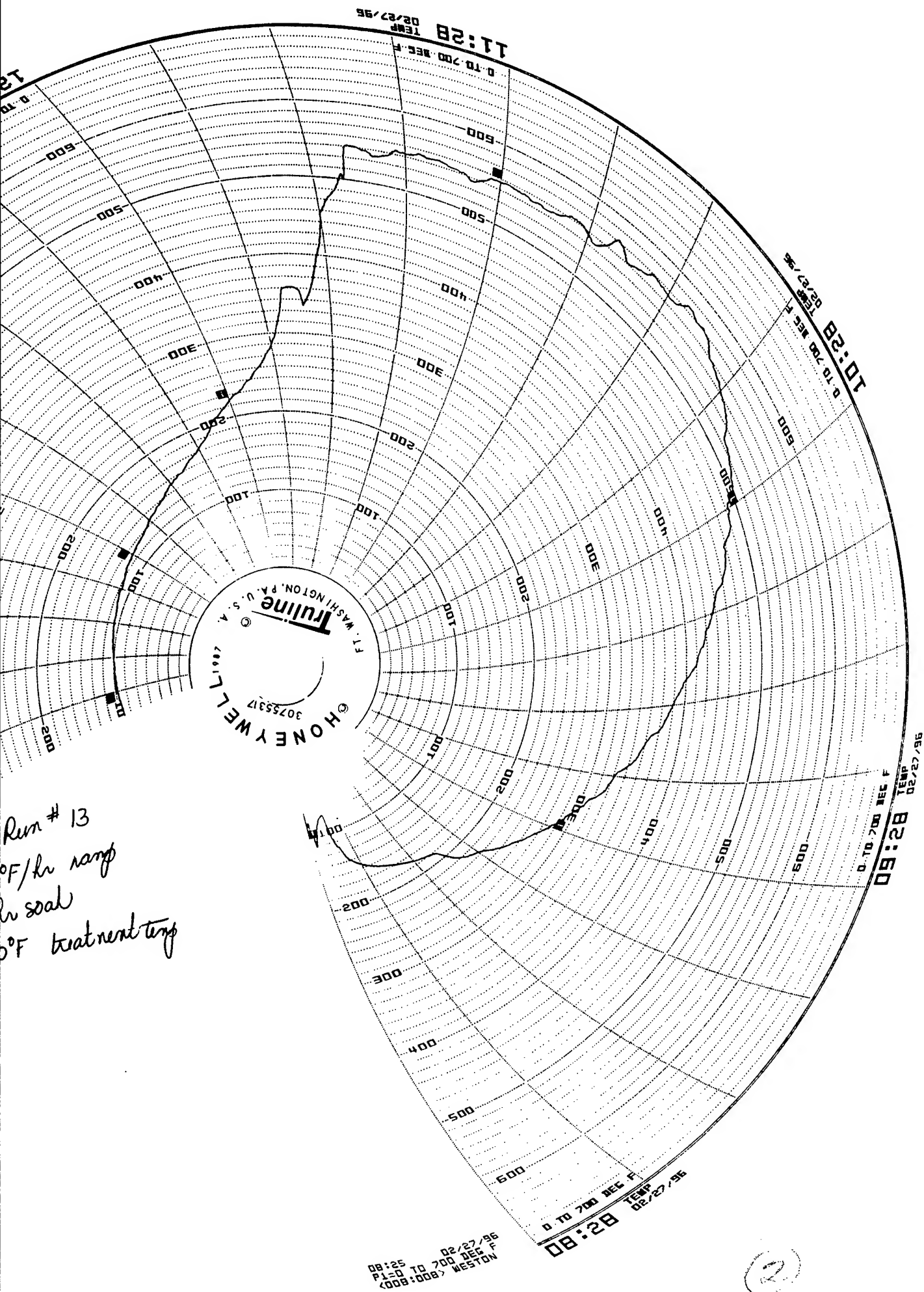


Test Run # 13  
200°F/hr ramp  
1 hr soak  
500°F treatment temp

1

08:25 02/27/96  
P150 TO 700 DEC F  
<008:008> WESTON

Run # 13  
 °F/hr ramp  
 in soil  
 5°F treatment temp



**Pre - START-UP (1 of 3)**

Date: 27 FEB 96  
Time: \_\_\_\_\_

Test Number: #14Ramp-Up Rate: 300°F/hrSoak Time: 1 hrSoak Temp: 600°F**MECHANICAL**

Initial each item.

☒ **Inspection doors/manways are SECURED**☒ **Gas Valves OPEN**☒ **View/Inspection Ports CLOSED**☒ **Record Gas (Propane) Valve Position**

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

**ELECTRICAL**

Initial each item.

☒ **All Lockout/Tagouts (1-5) are ACCOUNTED.**☒ **Furnace and Afterburner Control Breakers are ON.**☒ **Verify Emergency Pushbuttons are NOT ENGAGED.**☒ **BUMP Motors and switch to "AUTO"**

\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_ Afterburner I.D Fan (M-158)  
\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☒ **Calibrate CEM**

✓ Interconnecting Duct - NOx  
✓ Interconnecting Duct - THC  
✓ Stack NOx  
✓ Stack SO<sub>2</sub>  
✓ Stack THC  
✓ Stack CO  
✓ Stack O<sub>2</sub>  
✓ Stack CO<sub>2</sub>

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

|       |       |   |
|-------|-------|---|
| 75.6  | 74    |   |
| 31.1  | 31    |   |
| 75.6  | 75    |   |
| 126.4 | 123   | Y |
| 31.1  | 31    |   |
| 124   | 123.8 | Y |
| 5.97  | 5.7   |   |
| 4.89  | 4.7   |   |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

☐ **Datalogger/Computer is ON**

\_\_\_\_ Record Time (Computer Clock)  
\_\_\_\_ Record Ambient Temperature (TIT-300)  
\_\_\_\_ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

☒ **Pre - Spike Activities**

\_\_\_\_ Lock-out all Motors: Complete Exclusion Log  
\_\_\_\_ Secure Equipment Pad and Access Road w/ Chains  
\_\_\_\_ Spike Test Materials and Furnace Test Plates

LOADING/UNLOADING (2 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test Number: \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

FIELD ACTIVITIES

Initial each item.

☐ Load Furnace with Materials and Thermocouples

For each rack/bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

#1 Rack A's Characteristics.

|        |         |                   |         |                 |  |
|--------|---------|-------------------|---------|-----------------|--|
| BEFORE | 1500 LB | Initial Wt. (lbs) | 600 LB  | Final Wt. (lbs) |  |
| AFTER  | 1475    | STEEL DEB         | 367 LBS | 359 LBS         |  |
|        |         | ROCK DEB          | 367 LBS | 350 LBS         |  |

\*\* Secure pipe to prevent pipes from rolling

#5

|                      |                 |
|----------------------|-----------------|
| Initial Wt. (lbs)    | Final Wt. (lbs) |
| PIPE 27 LBS          | 27 LBS          |
| CINDER BLOCK 139 LBS | 139 LBS         |

#2 Rack B's Characteristics.

|        |          |                   |         |                 |  |
|--------|----------|-------------------|---------|-----------------|--|
| BEFORE | 1500 LBS | Initial Wt. (lbs) | 430 LBS | Final Wt. (lbs) |  |
| AFTER  | 1498     | STEEL PIPE        | 240 LBS | 240 LBS         |  |
|        |          | CLAY PIPE         | 204 LBS | 204 LBS         |  |

#3

TET

Materials

#6

TNT

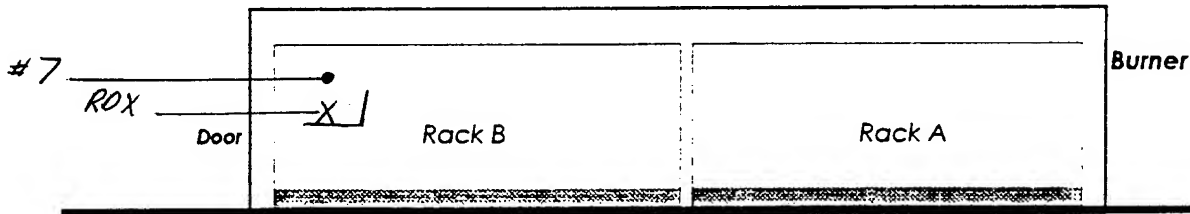
CINDER BLOCK 624 LBS

626 LBS

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

☐ Mark Locations of Thermocouples



☐ Roll Calls and Close Furnace Door

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### AFTERBURNER START-UP

Initial and record time for each item.

- ☐ Start "I.D. FAN". Adjust fan speed to maintain a system draft  $< -0.5$  In. WC
- ☐ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain  $< -0.5$  In. WC
- ☐ Start "OXIDIZER" (Burner). Adjust fan speed to maintain  $< -0.5$  In. WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

- ☐ Start "DATALOGGER" Pushbuttons on the Computer.
- ☐ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain  $< -0.5$  In. WC

@ 600 F: \_\_\_\_\_ :Time

@ 1200 F: \_\_\_\_\_ :Time

@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature

1800°F and system draft @  $< -0.5$  In WC.

### FURNACE START-UP

Initial and record time for each item.

- ☐ Set Bleed Air Damper to 75%
- ☐ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain  $< -0.5$  In. WC
- ☐ Set Controller to "MANUAL". Set controller output to 0.0
- ☐ Turn Furnace Key to "BURNER" Position.
- ☐ Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

- ☐ Open Bleed Air Valve to 100%
- ☐ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain  $< -0.5$  In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.

- ☐ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

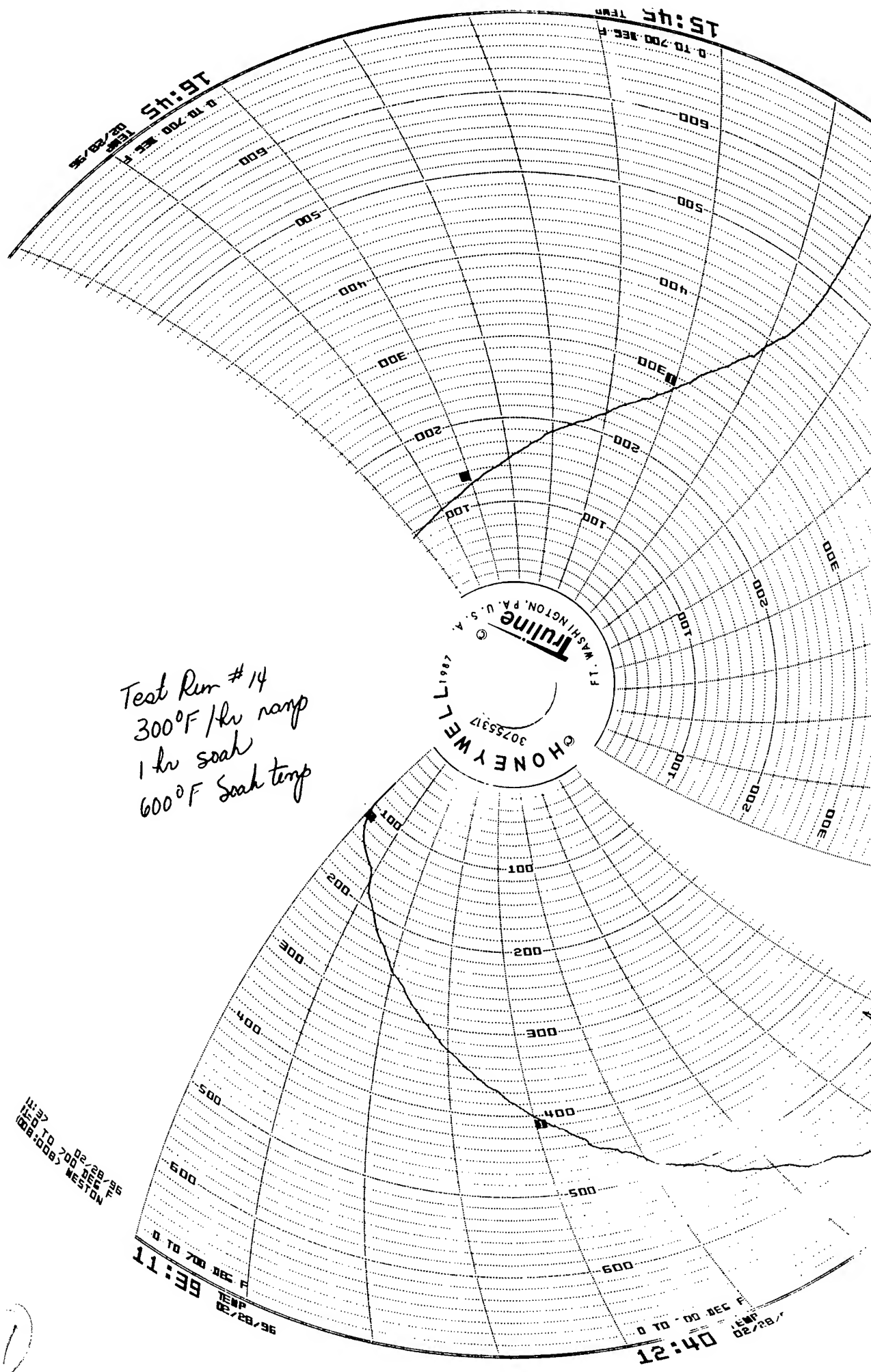
### COOL-DOWN

Initial and record time for each item.

- ☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.
- ☒ STOP "OXIDIZER" and "AIR BLOWER"
- ☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

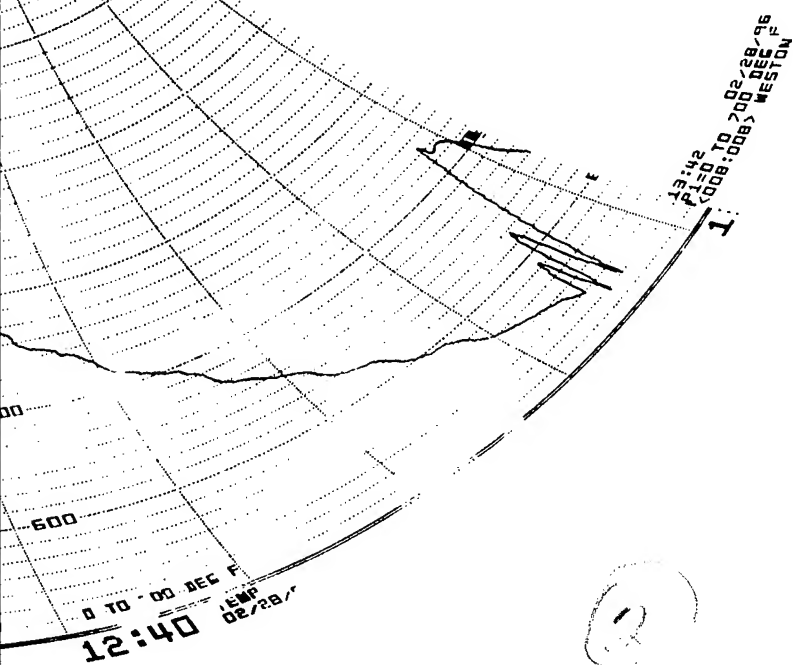
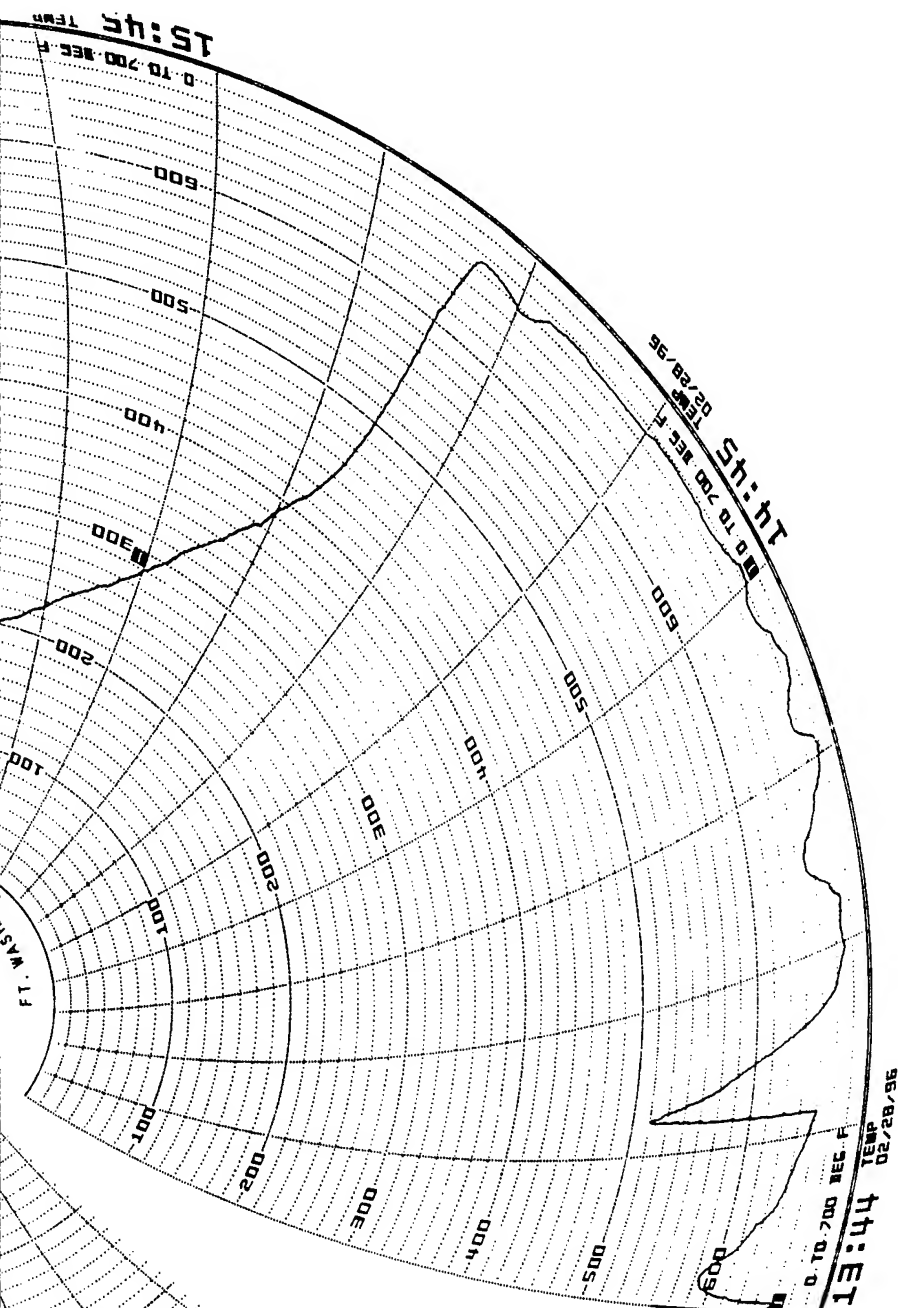




Test Run #14  
300°F/hr ramp  
1 hr soak  
600°F Soak temp

1





# Pre - START-UP (1 of 3)

Date: MARCH 1 96  
Time: \_\_\_\_\_

Test Number: #15  
Ramp-Up Rate: 300°F/hr  
Soak Time: 1hr  
Soak Temp: 600°F

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

70%

## ELECTRICAL

Initial each item.

- ☒ All lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

- \_\_\_\_\_ Furnace Combustion Blower (M-220)
- \_\_\_\_\_ Afterburner Combustion Blower (M-130)
- \_\_\_\_\_ Afterburner I.D Fan (M-158)
- \_\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

## Calibrate CEM

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx
- ☒ Stack SO<sub>2</sub>
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O<sub>2</sub>
- ☒ Stack CO<sub>2</sub>

Tank Recorded Adjustment (Y/N)  
Values Values

|       |       |   |
|-------|-------|---|
| 75.6  | 77    |   |
| 31.1  | 31    | Y |
| 75.6  | 75    |   |
| 126.4 | 126   |   |
| 31.1  | 31    |   |
| 124   | 123.6 |   |
| 5.97  | 5.9   | Y |
| 4.89  | 4.9   |   |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

## Datalogger/Computer is ON

- \_\_\_\_\_ Record Time (Computer Clock)
- \_\_\_\_\_ Record Ambient Temperature (MT-300)
- \_\_\_\_\_ Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

## Pre - Spike Activities

- ☒ Lock-out all Motors: Complete Exclusion Log
- ☒ Secure Equipment Pad and Access Road w/ Chains
- ☒ Spike Test Materials and Furnace Test Plates

LOADING/UNLOADING (2 of 3)

Test Number: \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

FIELD ACTIVITIES

Initial each item.

Load Furnace with Materials and Thermocouples

For each rack bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

#1 Rack A's Characteristics:  
600 LBS

|           | Initial Wt. (lbs) | Final Wt. (lbs) |
|-----------|-------------------|-----------------|
| STEEL DEB | 363 LBS           | 360 LBS         |
| ROCK DEB  | 367 LBS           | 354 LBS         |

\*\* Secure pipe to prevent pipes from rolling

#5

Materials

Initial Wt. (lbs)

Final Wt. (lbs)

#4

CINDER BLOCK

170 LBS

164 LBS

Take Pictures

#2 Rack B's Characteristics:  
430 LBS

|            | Initial Wt. (lbs) | Final Wt. (lbs) |
|------------|-------------------|-----------------|
| STEEL PIPE | 240 LBS           | 240 LBS         |
| CLAY PIPE  | 204 LBS           | 204 LBS         |

#3

TNT

Initial Wt. (lbs)

Final Wt. (lbs)

#6

ROX

CINDER BLOCK

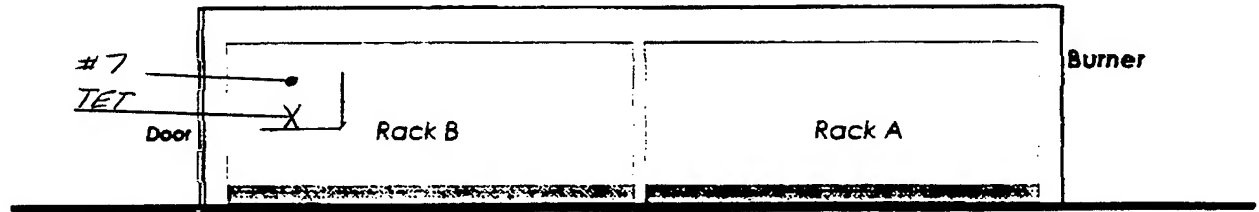
626 LBS

621 LBS

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

Mark Locations of Thermocouples



Roll Calls and Close Furnace Door  
*Kevin J. Hunsicker*  
*[Signature]*

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### BURNER START-UP

Initial and record time for each item.

- ☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC
- ☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC
- ☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☒ Start "DATALOGGER" Pushbuttons on the Computer.
- ☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 In. WC

@ 600 F. :Time:  
@ 1200 F. :Time:  
@ 1800 F. :Time:

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature  
1800°F and system draft @ < -0.5 In. WC.

### FURNACE START-UP

Initial and record time for each item.

- ☒ Set Bleed Air Damper to 75%
- ☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC
- ☒ Set Controller to "MANUAL". Set controller output to 0.0
- ☒ Turn Furnace Key to "BURNER" Position.
- ☒ Verify "INTERLOCK OK" light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☒ Open Bleed Air Valve to 100%
- ☒ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust  
ID fan speed to maintain < -0.5 In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.

- ☒ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

- ☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.
- ☒ STOP "OXIDIZER" and "AIR BLOWER"
- ☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

## HOURLY DATA LOG ( of )

Date: MARCH 196

**Time:**

Test Number: #15

Ramp-Up Rate:  $300^{\circ}\text{F/hr.}$

Soot Time: 1 hr.

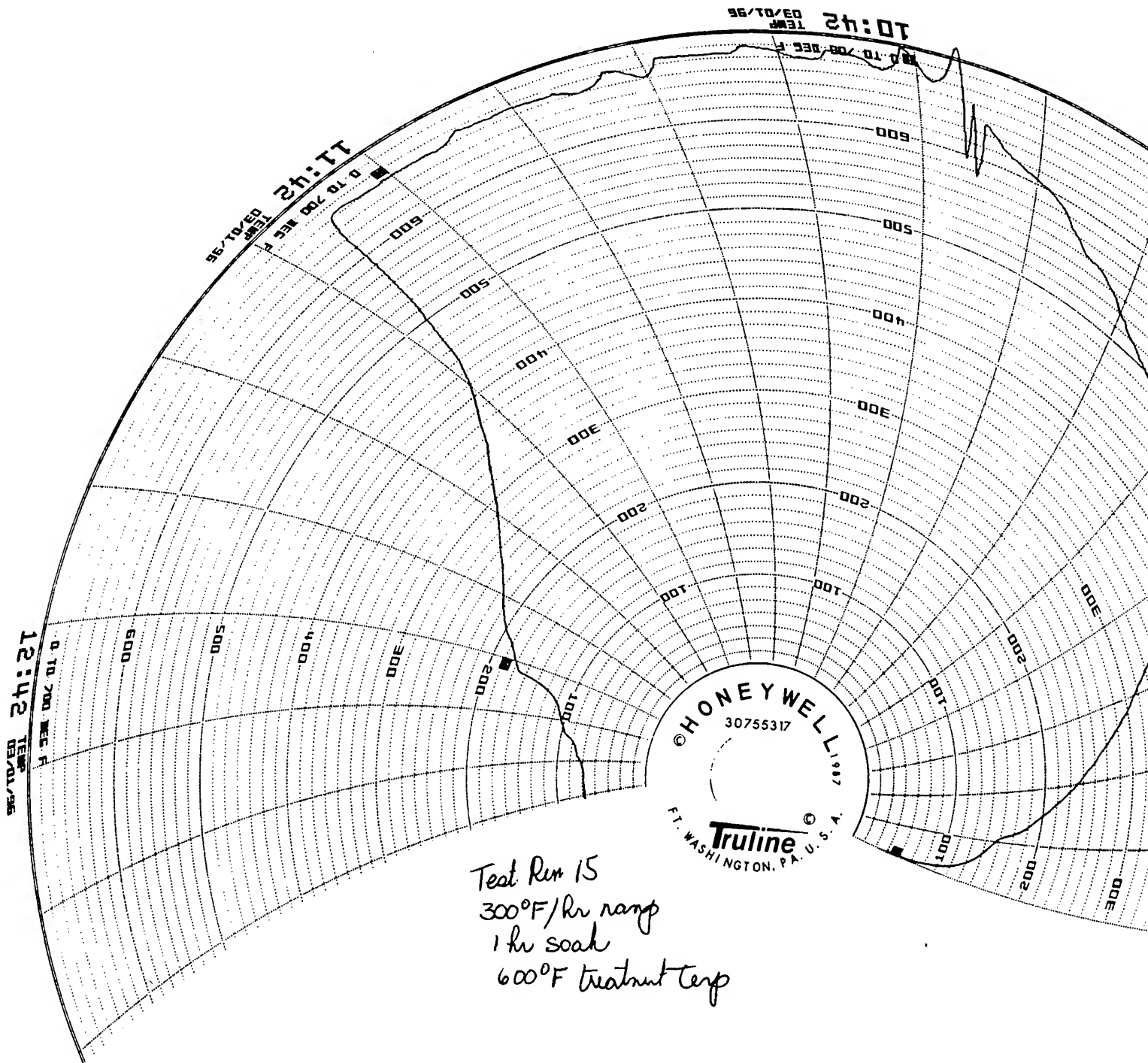
Soak Temp: 600°F

| Tag | Description | Unit                |
|-----|-------------|---------------------|
|     |             | 0900 1000 1100 1200 |

**Time:****FURNACE**[illegible]

# AFTERBURNER

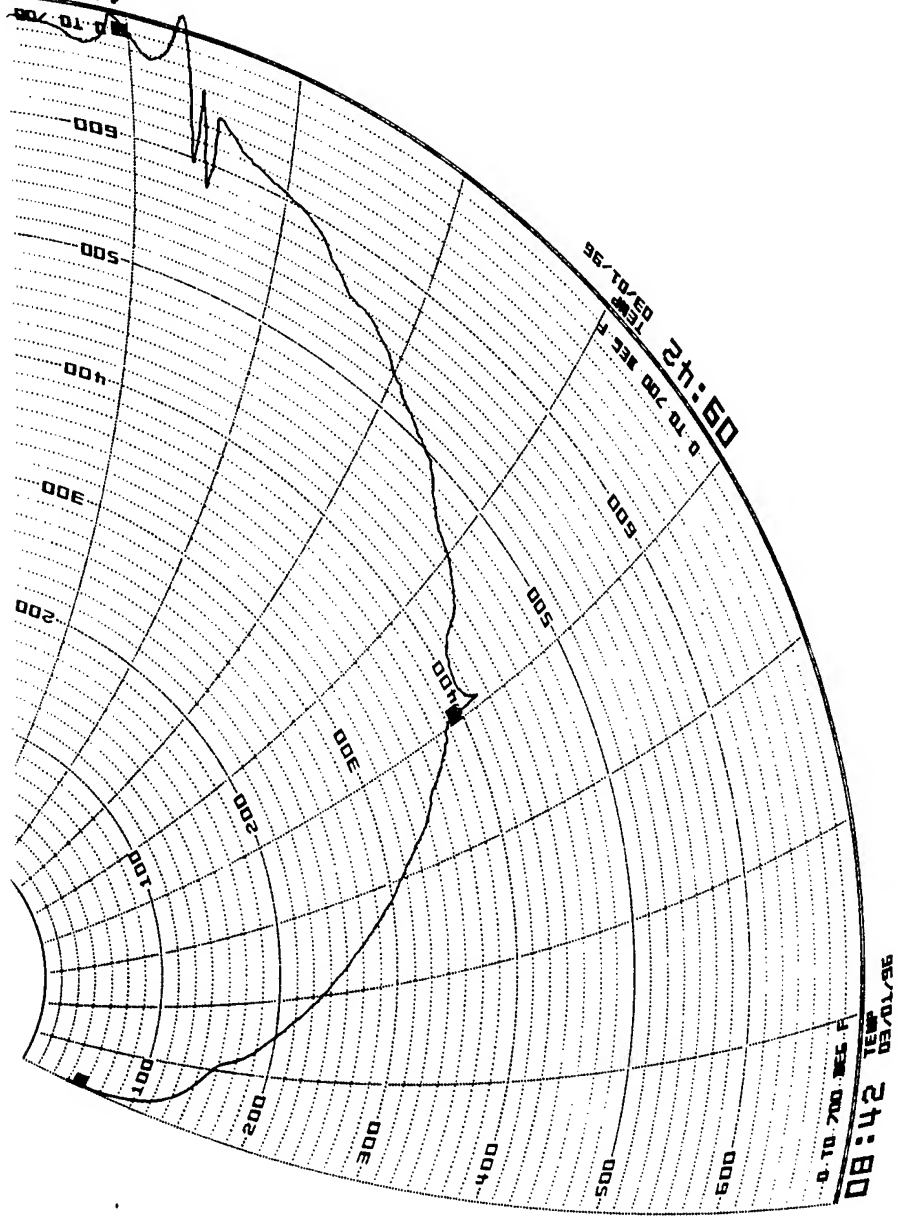
[illegible]**CEM**[illegible]



Test Run 15  
300°F/hr ramp  
1 hr soak  
600°F treatment temp

①

10:42



08:42 1500 03/01/96  
000:000 WESTON

2

**Pre - START-UP (1 of 3)**Date: 6 March 96

Time: \_\_\_\_\_

Test Number: 16ARamp-Up Rate: 300°/HRSoak Time: NoneSoak Temp: 600°**MECHANICAL**

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manways, etc.  
have been returned to a position capable of sustaining  
system operations.

68.5% (12,330 gal)**ELECTRICAL**

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

- ☒ Furnace Combustion Blower (M-220)
- ☒ Afterburner Combustion Blower (M-130)
- ☒ Afterburner I.D Fan (M-158)
- ☒ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☒ **Calibrate CEM**

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx **DUCT NO**
- ☒ Stack SO<sub>2</sub>
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O<sub>2</sub>
- ☒ Stack CO<sub>2</sub>

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

|       |       |   |
|-------|-------|---|
| 75.6  | 75    | Y |
| 31.1  | 31    | Y |
| 75.6  | 75    | Y |
| 126.4 | 126   | N |
| 31.1  | 31    | Y |
| 124.0 | 124.0 | Y |
| 5.97  | 6.0   | Y |
| 4.89  | 4.9   | Y |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

☒ **Datalogger/Computer is ON**

- Record Time (Computer Clock)
- Record Ambient Temperature (TIT-300)
- Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

☒ **Pre - Spike Activities**

- Lock-out all Motors: Complete Exclusion Log
- Secure Equipment Pad and Access Road w/ Chains
- Spike Test Materials and Furnace Test Plates



ADING/UNLOADING (2 of 3)

Date: 6 March 96  
Time:

Test Number 16A  
Ramp-Up Rate: 300°/HR  
Soak Time: None  
Soak Temp: 600°

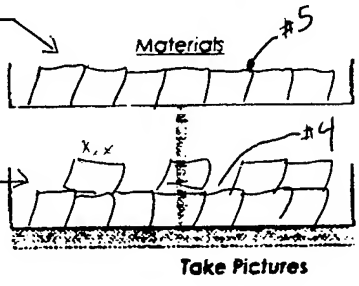
ELD ACTIVITIES ALL SPIKES TNT

Initial each item.

Load Furnace with Materials and Thermocouples

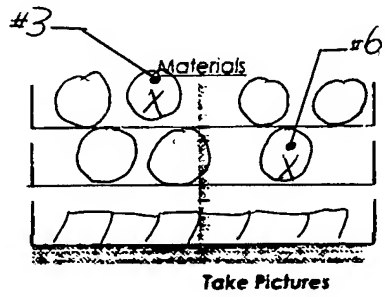
For each rack bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

#1 Rock A's Characteristics: 600 LBS  
1500 BEFORE  
Initial Wt. (lbs) 1460 LBS  
AFTER 1417  
1417 CINDER BLOCKS  
Final Wt. (lbs) 1317 LBS  
\*\* Secure pipe to prevent pipes from rolling



| Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|-----------------|
|                   |                 |
|                   |                 |
|                   |                 |

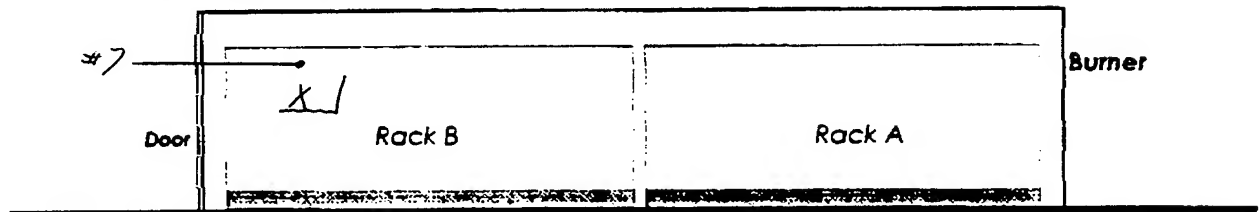
#2 Rack B's Characteristics: 430 LBS  
1554  
1507  
Initial Wt. (lbs) 240 LBS  
STEEL PIPE 240 LBS  
CLAY PIPE 204 LBS  
Final Wt. (lbs) 240 LBS  
204 LBS



| Initial Wt. (lbs) | Final Wt. (lbs) |
|-------------------|-----------------|
|                   |                 |
|                   |                 |
|                   |                 |

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

Mark Locations of Thermocouples



Roll Calls and Close Furnace Door  
Don Z. Hernandez  
Alex Zuercher  
Jim Ayre

Verify all site personnel are accounted for.  
Have each person initial this checklist at left  
Close and secure furnace door.

Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

**START-UP (3 of 3)**

Date: 6 March 96  
Time: \_\_\_\_\_

Test #: 16A  
Rmp-Up Time: 300°/HR  
Soak Time: None  
Soak Temp: 600°

**AFTERBURNER START-UP**

Initial and record time for each item.



Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC



Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain <-0.5 In.WC



Start "OXIDIZER" (Burner). Adjust fan speed to maintain <-0.5 In.WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.



Start "DATALOGGER" Pushbuttons on the Computer.



Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 In.WC

@ 600 F: \_\_\_\_\_ :Time

@ 1200 F: \_\_\_\_\_ :Time

@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature 1800°F and system draft @ <-0.5 In WC.

**FURNACE START-UP**

Initial and record time for each item.



Set Bleed Air Damper to 75%



Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain <-0.5 In.WC



Set Controller to "MANUAL". Set controller output to 0.0



Turn Furnace Key to "BURNER" Position.



Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.



Open Bleed Air Valve to ~~100%~~ 75%



Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain <-0.5 In.WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.



Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

**COOL-DOWN**

Initial and record time for each item.



Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.



STOP "OXIDIZER" and "AIR BLOWER"



STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

Date: 6 March 96  
Time:

Test Number: 16A  
Ramp-Up Rate: 300°/HR  
Soak Time: None  
Soak Temp: 600°

[illegible]**Time:****FURNACE**

|         |                                                         |        |       |       |
|---------|---------------------------------------------------------|--------|-------|-------|
| PIT-232 | Fuel Gas Pressure                                       | In. WC | 10.09 | 11.29 |
| FIT-231 | Fuel Gas Flow                                           | CFH    | 98    | 196   |
| PIT-222 | Combustion Air Pressure                                 | In. WC | 22.9  | 23.20 |
| FIT-221 | Combustion Air Flow                                     | CFH    | 9798  | 9600  |
| PIT-158 | Chamber Pressure                                        | In. WC | - .23 | - .21 |
| TIT-201 | Recorder Temperature                                    | Deg.F  | 302   | 657   |
| TIT-202 | Furnace Exit Gas Temp (Control)<br>measured in Ext Duct | Deg.F  | 222   | 520   |
| TIT-203 | Material Thermocouple #1                                | Deg.F  | 270   | 693   |
| TIT-204 | Material Thermocouple #2                                | Deg.F  | 172   | 383   |
| TIT-205 | Material Thermocouple #3                                | Deg.F  | 218   | 527   |
| TIT-206 | Material Thermocouple #4                                | Deg.F  | 248   | 677   |
| TIT-207 | Material Thermocouple #5                                | Deg.F  | 312   | 732   |
|         | material Temp Avg.                                      | Deg F. | 254   | 602   |

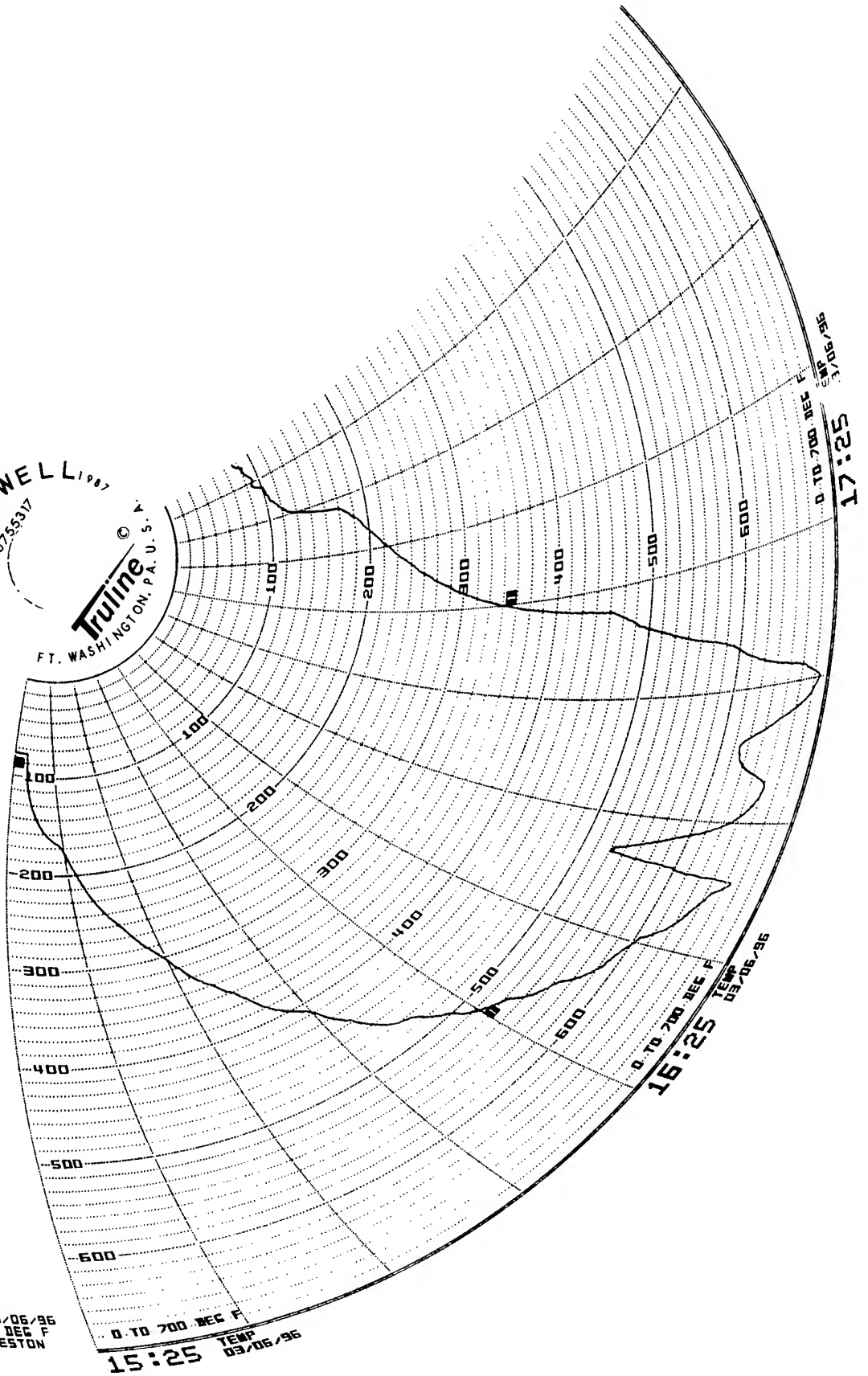
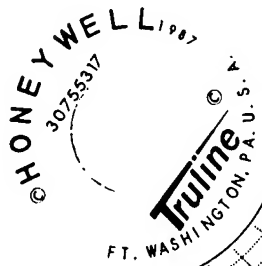
## AFTERBURNER

[illegible]***GEM***[illegible]

600°F treatment temp  
300°F/hr ramp  
No Soak

TEST # 16A

15:22 03/06/96  
P1=0 TO 700 DEG F  
<008:008> WESTON



# Pre - START-UP (1 of 3)

Date: 6 MAR '96  
Time: \_\_\_\_\_

Test Number: 168  
Ramp-Up Rate: 300°F/hr  
Soak Time: 0 hr  
Soak Temp: 600°F

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☐ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc. have been returned to a position capable of sustaining system operations.

## ELECTRICAL

Initial each item.

- ☒ All lockout/tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_ Afterburner I.D Fan (M-158)  
\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after all motors have been "BUMPED" to verify operations.

### Calibrate CEM

*DONE PM*

\_\_\_\_ Interconnecting Duct - NOx  
\_\_\_\_ Interconnecting Duct - THC  
\_\_\_\_ Stack NOx  
\_\_\_\_ Stack SO2  
\_\_\_\_ Stack THC  
\_\_\_\_ Stack CO  
\_\_\_\_ Stack O2  
\_\_\_\_ Stack CO

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

|  |  |  |
|--|--|--|
|  |  |  |
|  |  |  |
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|  |  |  |
|  |  |  |
|  |  |  |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

### Datalogger/Computer is ON

\_\_\_\_ Record Time (Computer Clock)  
\_\_\_\_ Record Ambient Temperature (TTT-300)  
\_\_\_\_ Record Ambient Humidity (call Weather Service 664-3010 or 945-7000)

### Pre - Spike Activities

- ☒ Lock-out all Motors: Complete Exclusion Log
- ☒ Secure Equipment Pad and Access Road w/ Chains
- ☒ Spike Test Materials and Furnace Test Plates

ADING/UNLOADING (2 of 3)

Date: 6 MARCH 96  
Time:

Test Number 16B  
Ramp-Up Rate:  
Soak Time:  
Soak Temp:

LD ACTIVITIES ALL SPIKE TEST

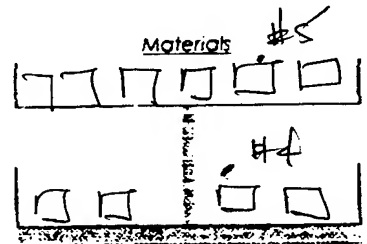
Load Furnace with Materials and Thermocouples

Initial each item.

For each rack/bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

Rock A's Characteristics: 600 lbs

BEFORE 1500 Initial Wt. (lbs) Final Wt. (lbs)  
AFTER 1317 lbs 1487

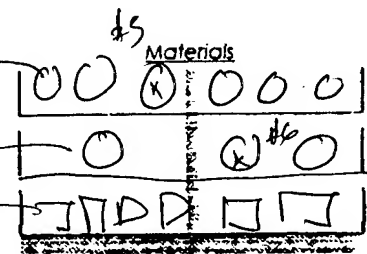


Initial Wt. (lbs) Final Wt. (lbs)  
Take Pictures

\*\* Secure pipe to prevent pipes from rolling

#2 Rack B's Characteristics:

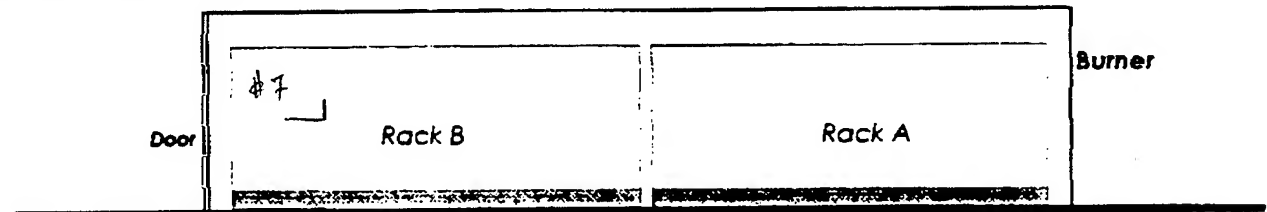
BEFORE 1500 Initial Wt. (lbs) Final Wt. (lbs)  
AFTER 1496 Steel 240 lbs Clay 204 lbs 680 633 lbs



Initial Wt. (lbs) Final Wt. (lbs)  
Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

Mark Locations of Thermocouples



Roll Calls and Close Furnace Door

Signature: [Handwritten Signature]

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### BURNER START-UP

Initial and record time for each item.

☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC

☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain < -0.5 In. WC

☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 In. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

☒ Start "DATALOGGER" Pushbuttons on the Computer.

☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 In. WC

@ 600 F: \_\_\_\_\_ :Time: \_\_\_\_\_

@ 1200 F: \_\_\_\_\_ :Time: \_\_\_\_\_

@ 1800 F: \_\_\_\_\_ :Time: \_\_\_\_\_

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature  
1800°F and system draft @ < -0.5 In. WC.

### FURNACE START-UP

Initial and record time for each item.

☒ Set Bleed Air Damper to 75%

☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain < -0.5 In. WC

☒ Set Controller to "MANUAL". Set controller output to 0.0

☒ Turn Furnace Key to "BURNER" Position.

☒ Verify "INTERLOCK OK" light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

☒ Open Bleed Air Valve to 100%

☒ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust  
ID fan speed to maintain < -0.5 In. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.

☒ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

☒ STOP "OXIDIZER" and "AIR BLOWER"

☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

## HOURLY DATA LOG ( of )

**Author:**

**Time:**

**Test Number:**

**Ramp-Up Rate:**

**Seat Time:**

**East Town:**

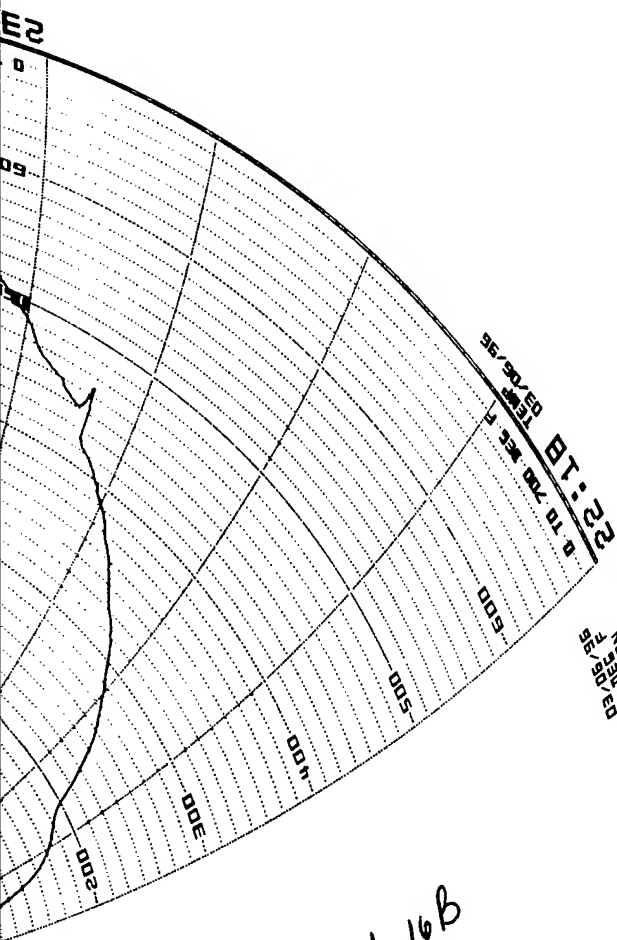
[illegible]**Time:****FURNACE**

|                                   |                                   |        |       |       |
|-----------------------------------|-----------------------------------|--------|-------|-------|
| PIT-232                           | Fuel Gas Pressure                 | In.WC  | 10.36 | 11.50 |
| FIT-231                           | Fuel Gas Flow                     | CFH    | 93    | 190   |
| PIT-222                           | Combustion Air Pressure           | In.WC  | 12.44 | 23.47 |
| FIT-221                           | Combustion Air Flow               | CFH    | 9913  | 9681  |
| PIT-158                           | Chamber Pressure                  | In.WC  | -0.16 | - .14 |
| TIT-201                           | Recorder Temperature              | Deg.F  | 230   | 68    |
| TIT-202                           | Furnace Exit Gas Temp (Control)   | Deg.F  | 231   | 508   |
| TIT-203                           | Material Thermocouple #1          | Deg.F  | 275   | 509   |
| TIT-204                           | Material Thermocouple #2          | Deg.F  | 205   | 281   |
| TIT-205                           | Material Thermocouple #3          | Deg.F  | 271   | 346   |
| TIT-206                           | Material Thermocouple #4          | Deg.F  | 286   | 466   |
| TIT-207                           | Material Thermocouple #5          | Deg.F  | 313   | 328   |
| AFTERBURNER TIT 201 EXIT GAS TEMP |                                   |        | 282   | 385   |
| TIT 100 INLET GAS                 |                                   |        | 327   | 833   |
|                                   |                                   |        | 229   | 307   |
| FIT-131                           | Combustor or Burner Temp. Control | Deg. F | 1823  | 1802  |
| FIT-148                           | Fumes Flow                        | CFM    | 2143  | 3444  |
| PIT-151                           | Fume Pressure (Furnace Draft)     | In.WC  | 033   | 1.51  |
| TIT-145                           | Combustor Temperature             | Deg. F | 1831  | 1803  |
| PIT-133                           | Fuel Pressure                     | PSIG   | 052   | 082   |
| TIT-121                           | Fuel Gas Flow                     | CFM    | 810   | 1098  |

***CEM***[illegible]







TESTED BY: 8001:8001  
DATE: 10/1/81  
TIME: 10:10  
BY: 10/1/81

Test 16B  
300°F/hr  
0 hr soak  
600°F Soak Temp

12

**Pre - START-UP (1 of 3)**Date: 7 MARCH 96  
Time: \_\_\_\_\_Test Number: 16 C ROX  
Ramp-Up Rate: 300°F/hr  
Soak Time: 0  
Soak Temp: 600°C**MECHANICAL**

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ Record Gas (Propane) Valve Position 67%

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

68.5%**ELECTRICAL**

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"
- ☒ Furnace Combustion Blower (M-220)
- ☒ Afterburner Combustion Blower (M-130)
- ☒ Afterburner I.D Fan (M-158)
- ☒ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

☒ **Calibrate CEM**

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx Duct NO
- ☒ Stack SO<sub>2</sub>
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O<sub>2</sub>
- ☒ Stack CO<sub>2</sub>

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

|       |     |   |
|-------|-----|---|
| 75.6  | 75  | Y |
| 31.1  | 31  | Y |
| 75.6  | 75  | Y |
| 126.4 | 126 | Y |
| 31.1  | 31  | Y |
| 124.0 | 124 | N |
| 5.97  | 6.0 | N |
| 4.89  | 4.9 | N |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

☒ **Datalogger/Computer is ON**

- Record Time (Computer Clock)
- Record Ambient Temperature (TIT-300)
- Record Ambient Humidity ( call Weather Service 664-3010 or 945-7000)

☒ **Pre - Spike Activities**

- Lock-out all Motors; Complete Exclusion Log
- Secure Equipment Pad and Access Road w/ Chains
- Spike Test Materials and Furnace Test Plates

## LOADING/UNLOADING (2 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test Number: \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### FIELD ACTIVITIES

Initial each item.

#### ☐ Load Furnace with Materials and Thermocouples

For each rack/bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

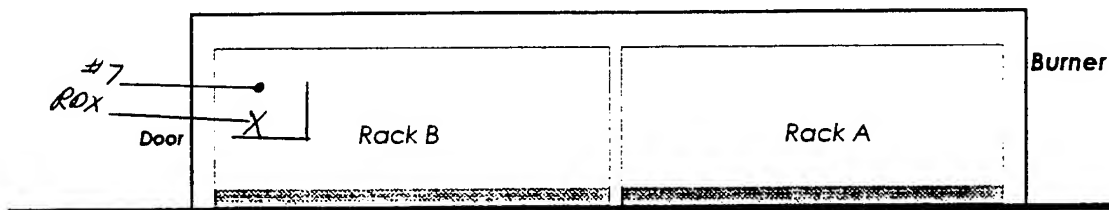
|                                                                                                                                               |  |                                             |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------|--|
| <p>#1 Rack A's Characteristics.<br/>START 600 LB<br/>1500 LB Initial Wt. (lbs)<br/>AFTER CINDER BLOCK Final Wt. (lbs)<br/>1400 LB<br/>LBS</p> |  | <p>#5 Initial Wt. (lbs) Final Wt. (lbs)</p> |  |
| <p>Rack B's Characteristics.<br/>START 430 LB<br/>1500 LB Initial Wt. (lbs)<br/>AFTER STEEL PIPE Final Wt. (lbs)<br/>240 LB<br/>LBS</p>       |  | <p>#3 Initial Wt. (lbs) Final Wt. (lbs)</p> |  |
| <p>CLAY PIPE<br/>204 LB</p>                                                                                                                   |  | <p>#6 Initial Wt. (lbs) Final Wt. (lbs)</p> |  |
| <p>CINDER BLOCK<br/>626 LB</p>                                                                                                                |  | <p>Take Pictures</p>                        |  |

\*\* Secure pipe to prevent pipes from rolling

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

#### ☐ Mark Locations of Thermocouples



#### ☐ Roll Calls and Close Furnace Door

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

#### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Ramp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### BURNER START-UP

Initial and record time for each item.

Start "I.D. FAN". Adjust fan speed to maintain a system draft  $< -0.5$  in. WC

Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain  $< -0.5$  in. WC

Start "OXIDIZER" (Burner). Adjust fan speed to maintain  $< -0.5$  in. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

Start "DATALOGGER" Pushbuttons on the Computer.

Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain  $< -0.5$  in. WC

@ 600 F: \_\_\_\_\_ Time: \_\_\_\_\_

@ 1200 F: \_\_\_\_\_ Time: \_\_\_\_\_

@ 1800 F: \_\_\_\_\_ Time: \_\_\_\_\_

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature  
1800°F and system draft @  $< -0.5$  in. WC.

### FURNACE START-UP

Initial and record time for each item.

Set Bleed Air Damper to 75%

Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain  $< -0.5$  in. WC

Set Controller to "MANUAL". Set controller output to 0.0

Turn Furnace Key to "BURNER" Position.

Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

Open Bleed Air Valve to 100%

Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust  
ID fan speed to maintain  $< -0.5$  in. WC, afterburner temp @ 1800 Deg F, and furnace temp @, SOAK temperature.

Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

STOP "OXIDIZER" and "AIR BLOWER"

STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

## HOURLY DATA LOG ( 1 of 1 )

Date: 7 MARCH 96  
Time: \_\_\_\_\_

**Time:**

Test Number: 16 C RDX

Ramp-Up Rate:  $300^{\circ}/\text{HR}$

Sent Time: 0

Soak Temp: 600 °F

| Tag | Description | Unit           |
|-----|-------------|----------------|
|     |             | 1300 1345 1580 |

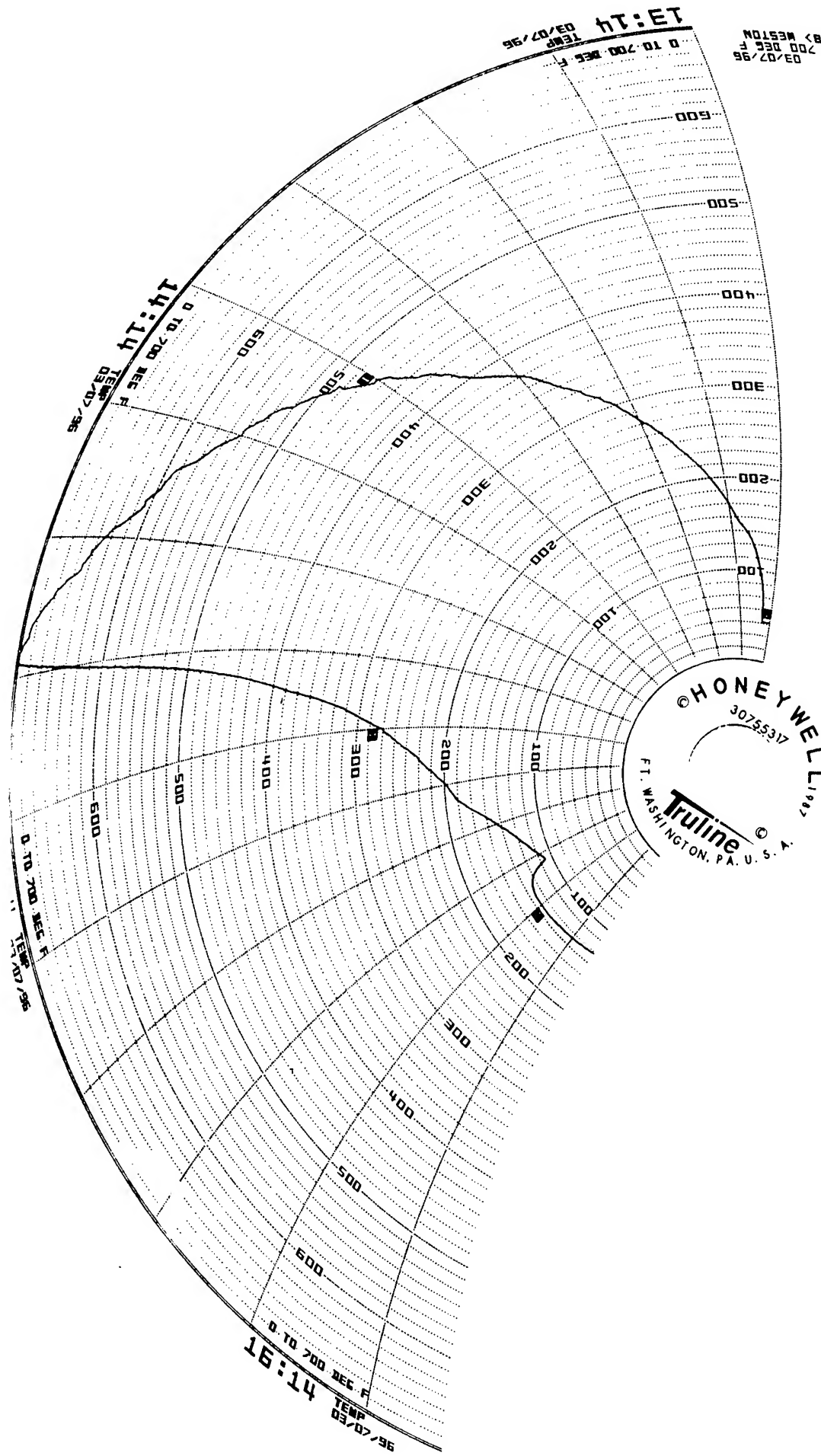
**Time:**

## **FURNACE**

|         |                                 |        |      |      |       |
|---------|---------------------------------|--------|------|------|-------|
| PIT-232 | Fuel Gas Pressure               | In. WC | 383  | 1247 | 12.63 |
| FIT-231 | Fuel Gas Flow                   | CFH    | 0    | 195  | 2.02  |
| PIT-222 | Combustion Air Pressure         | In. WC | 24.2 | 254  | 25.47 |
| FIT-221 | Combustion Air Flow             | CFH    | 1224 | 9977 | 9963  |
| PIT-158 | Chamber Pressure                | In. WC | -31  | -14  | -14   |
| TIT-201 | Recorder Temperature            | Deg.F  | 46   | 627  | 721   |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg.F  | 44   | 503  | 570   |
| TIT-203 | Material Thermocouple #1        | Deg.F  | 49   | 480  | 774   |
| TIT-204 | Material Thermocouple #2        | Deg.F  | 50   | 266  | 312   |
| TIT-205 | Material Thermocouple #3        | Deg.F  | 46   | 528  | 598   |
| TIT-206 | Material Thermocouple #4        | Deg.F  | 42   | 661  | 730   |
| TIT-207 | Material Thermocouple #5        | Deg.F  | 43   | 667  | 719   |
|         |                                 |        | 46   | 561  | 620   |

## AFTERBURNER

[illegible]**GEM**[illegible]



13:12  
PLD 0 TO 700 DEC F  
<008:008> WESTON  
03/07/96

Test 16 C  
300°F/hr ramp  
0 - Soak  
600°F Soak Temp

# Pre - START-UP (1 of 3)

Date: 3-7-96  
Time: \_\_\_\_\_

Test Number: 16D  
Ramp-Up Rate: 300°F/hr  
Soak Time: 0  
Soak Temp: 600°F

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☐ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

## ELECTRICAL

Initial each item.

- ☒ All lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_ Afterburner I.D. Fan (M-158)  
\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

### Calibrate CEM

DID in the A.M.

\_\_\_\_ Interconnecting Duct - NOx  
\_\_\_\_ Interconnecting Duct - THC  
\_\_\_\_ Stack NOx  
\_\_\_\_ Stack SO2  
\_\_\_\_ Stack THC  
\_\_\_\_ Stack CO  
\_\_\_\_ Stack O2  
\_\_\_\_ Stack CO

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |
|             |                 |                  |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

### Datalogger/Computer is ON

\_\_\_\_ Record Time (Computer Clock)  
\_\_\_\_ Record Ambient Temperature (TIT-300)  
\_\_\_\_ Record Ambient Humidity (call Weather Service 664-3010 or 945-7000)

### Pre - Spike Activities

\_\_\_\_ Lock-out all Motors: Complete Exclusion Log  
\_\_\_\_ Secure Equipment Pad and Access Road w/ Chains  
\_\_\_\_ Spike Test Materials and Furnace Test Plates



# LOADING/UNLOADING (2 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test Number: \_\_\_\_\_  
Ramp-Up Rate: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

## FIELD ACTIVITIES

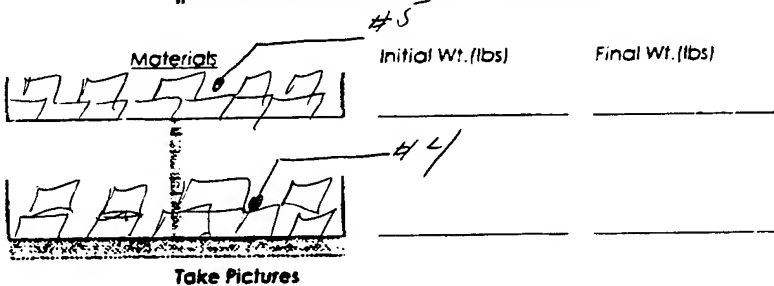
Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack/bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

#1 Rack A's Characteristics.

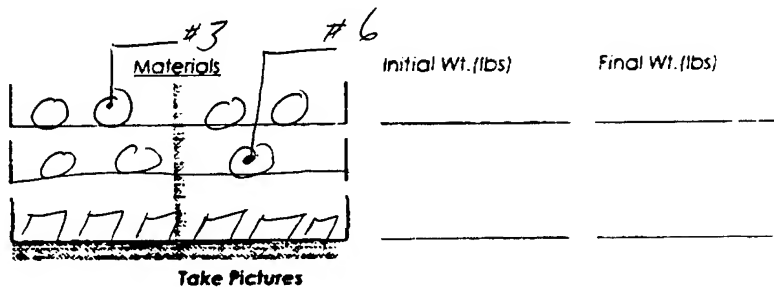
Initial Wt. (lbs) \_\_\_\_\_  
Final Wt. (lbs) \_\_\_\_\_  
1489  
1497 1/2



\*\* Secure pipe to prevent pipes from rolling

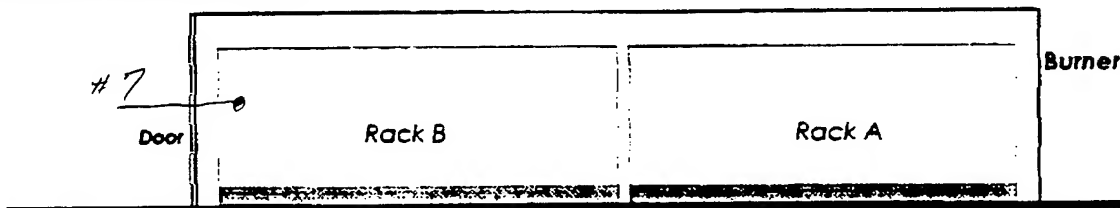
#2 Rack B's Characteristics.

Initial Wt. (lbs) \_\_\_\_\_  
Final Wt. (lbs) \_\_\_\_\_  
1489  
1489 1/2



\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



### ☒ Roll Calls and Close Furnace Door

Verify all site personnel are accounted for.  
Have each person initial this checklist at left.  
Close and secure furnace door.

### ☐ Complete Spike Sample Weight Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Ramp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### BURNER START-UP

Initial and record time for each item.

- ☒ Start "I.D. FAN". Adjust fan speed to maintain a system draft  $< -0.5$  in. WC
- ☒ Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain  $< -0.5$  in. WC
- ☒ Start "OXIDIZER" (Burner). Adjust fan speed to maintain  $< -0.5$  in. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☒ Start "DATALOGGER" Pushbuttons on the Computer.
- ☒ Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain  $< -0.5$  in. WC

@ 600 F: \_\_\_\_\_ :Time  
@ 1200 F: \_\_\_\_\_ :Time  
@ 1800 F: \_\_\_\_\_ :Time

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature  
1800°F and system draft @  $< -0.5$  in. WC.

### FURNACE START-UP

Initial and record time for each item.

- ☒ Set Bleed Air Damper to 75%
- ☒ Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain  $< -0.5$  in. WC
- ☒ Set Controller to "MANUAL". Set controller output to 0.0
- ☒ Turn Furnace Key to "BURNER" Position.
- ☒ Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

- ☒ Open Bleed Air Valve to 100%
- ☒ Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust  
ID fan speed to maintain  $< -0.5$  in. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.

- ☒ Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

**\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS**

### COOL-DOWN

Initial and record time for each item.

- ☒ Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.
- ☒ STOP "OXIDIZER" and "AIR BLOWER"
- ☒ STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

**\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.**

## HOURLY DATA LOG ( \_ of \_ )

Date: 7 MAR 96

**Time:**

**Test Number:**

### **Awake-Up Rate:**

**Last Time:**

**Leak Temp:**

| Tag | Description | Unit    |
|-----|-------------|---------|
|     |             | 2100 22 |

**Type:**

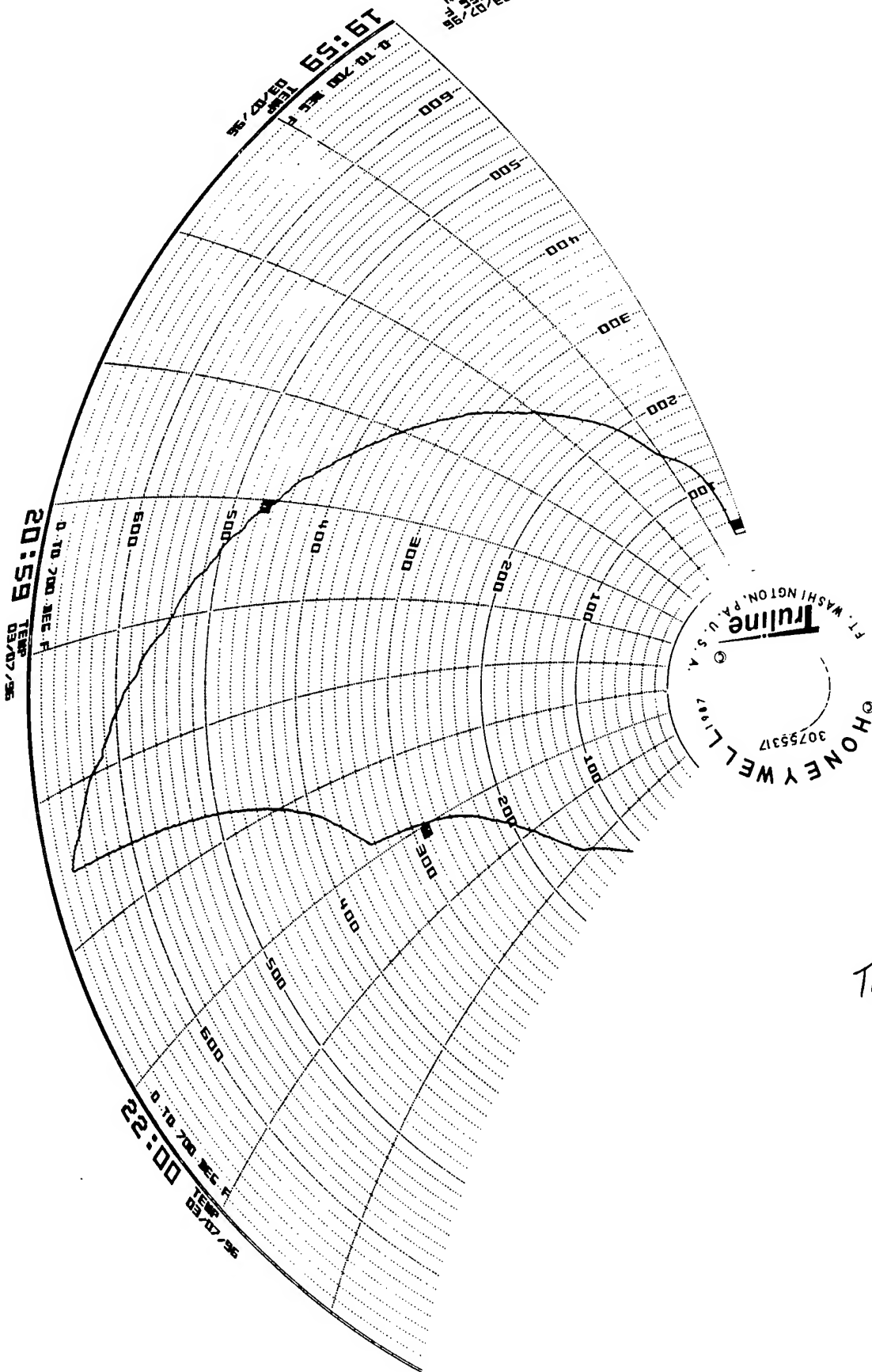
## **FURNACE**

|         |                                 |       |       |       |
|---------|---------------------------------|-------|-------|-------|
| PIT-232 | Fuel Gas Pressure               | In.WC | 1225  | 976   |
| FIT-231 | Fuel Gas Flow                   | CFH   | 136   | 58    |
| PIT-222 | Combustion Air Pressure         | In.WC | 2525  | 2544  |
| FIT-221 | Combustion Air Flow             | CFH   | 10141 | 10789 |
| PIT-158 | Chamber Pressure                | In.WC | -14   | -42   |
| TIT-201 | Recorder Temperature            | Deg.F | 443   | 365   |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg.F | 342   | 313   |
| TIT-203 | Metallic Thermocouple #1        | Deg.F | 429   | 457   |
| TIT-204 | Metallic Thermocouple #2        | Deg.F | 250   | 330   |
| TIT-205 | Metallic Thermocouple #3        | Deg.F | 313   | 410   |
| TIT-206 | Metallic Thermocouple #4        | Deg.F | 420   | 391   |
| CYT-207 | Metallic Thermocouple #5        | Deg.F | 447   | 335   |
|         |                                 |       | 373   | 383   |

## AFTERBURNER

[illegible]**CEM**[illegible]

19157  
 P1-D TO 200 DEG F  
 03/07/96  
 (008:008) WESTON



Test 16 D  
 300°F/hr ramp  
 0 soak time  
 600°F treatment temp

# Pre - START-UP (1 of 3)

Date: 8 MAR 96  
Time: 1050

Test Number: 17A  
Ramp-Up Rate: 300°F/hr  
Soak Time: 2 HRS  
Soak Temp: 600°F

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ 66% Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc.  
have been returned to a position capable of sustaining  
system operations.

## ELECTRICAL

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

- ☒ Furnace Combustion Blower (M-220)
- ☒ Afterburner Combustion Blower (M-130)
- ☒ Afterburner I.D Fan (M-158)
- ☒ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations.

## Calibrate CEM

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx Duct NO
- ☒ Stack SO<sub>2</sub>
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O<sub>2</sub>
- ☒ Stack CO<sub>2</sub>

Tank Recorded Adjustment (Y/N)  
Values Values

|       |       |   |
|-------|-------|---|
| 75.6  | 75    | Y |
| 31.1  | 31    | N |
| 75.6  | 75    | N |
| 126.  | 126   | N |
| 31.1  | 31    | N |
| 124.0 | 124.8 | N |
| 5.97  | 6.0   | N |
| 4.89  | 4.9   | N |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

## Datalogger/Computer is ON

- ☒ Record Time (Computer Clock)
- ☒ Record Ambient Temperature (TIT-300)
- ☒ Record Ambient Humidity (call Weather Service 664-3010 or 945-7000)

## Pre - Spike Activities

- ☒ Lock-out all Motors: Complete Exclusion Log
- ☒ Secure Equipment Pad and Access Road w/ Chains
- ☒ Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Test Number 17A  
Ramp-Up Rate: 300°F/hr  
Soak Time: 2hr  
Soak Temp: 600°F

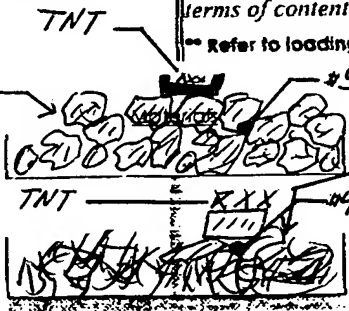
## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack/bin, provide a description in terms of contents, appearance, moisture, etc.  
\*\* Refer to loading procedures for instructions.

#1 Rack A's Characteristics:  
600 LB  
START 2102 LBS Initial Wt. (lbs) Final Wt. (lbs)  
2028  
FROM ROCK DEBRIS  
TESTS #11 354 LBS  
#15 354 LBS  
TOTAL 706 LBS

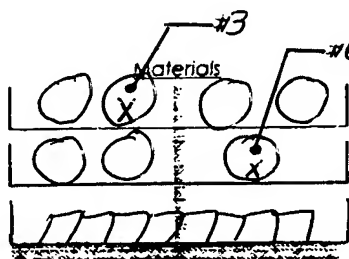


Initial Wt. (lbs) Final Wt. (lbs)  
STEEL DEB  
FROM #11 434 LBS  
TEST #15 360 LBS  
TOTAL 794 LBS

\*\* Secure pipe to prevent pipes from rolling

Take Pictures

#2 Rack B's Characteristics:  
430 LB  
START 1500 LBS Initial Wt. (lbs) Final Wt. (lbs)  
1494  
STEEL PIPE 240 LBS  
CLAY PIPE 204 LBS

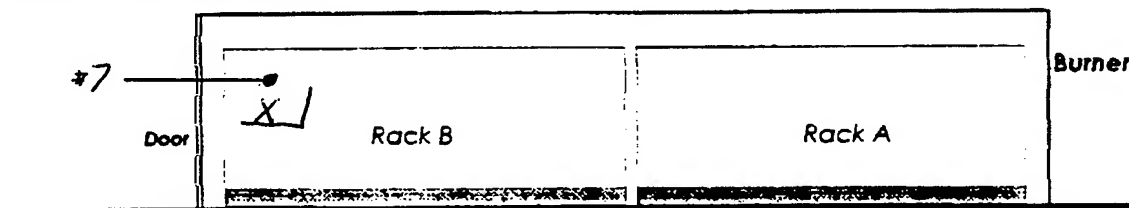


Initial Wt. (lbs) Final Wt. (lbs)  
CINDER BLOCKS 626 LBS

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



☐ Roll Calls and Close Furnace Door  
Kevin Z. Henderson  
Alan Zeman

Verify all site personnel are accounted for.  
Have each person initial this checklist at left  
Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## START-UP (3 of 3)

Test # 17 A

Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Ramp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### BURNER START-UP

Initial and record time for each item.

☒ H

Start "I.D. FAN". Adjust fan speed to maintain a system draft  $< -0.5$  in. WC

☒ H

Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain  $< -0.5$  in. WC

☒ H

Start "OXIDIZER" (Burner). Adjust fan speed to maintain  $< -0.5$  in. WC

Once the burner has started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

☒ H

Start "DATALOGGER" Pushbuttons on the Computer.

☒ H

Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain  $< -0.5$  in. WC

@ 600 F. :Time

@ 1200 F. :Time

@ 1800 F. :Time

Once the burner is at low fire, burner control will be released to the operator.  
The operator must adjust gas flow and ID fan speed to maintain temperature 1800°F and system draft @  $< -0.5$  in. WC.

### FURNACE START-UP

Initial and record time for each item.

☒ H

Set Bleed Air Damper to 75%.

☒ H

Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain  $< -0.5$  in. WC

☒ H

Set Controller to "MANUAL". Set controller output to 0.0

☒ H

Turn Furnace Key to "BURNER" Position.

☒ H

Verify "INTERLOCK OK" light is energized.

Once the burner started, the control system will initiate a purge sequence.  
The pilot will then attempt to light the burner at low fire.

☒ H

Open Bleed Air Valve to 100%

☒ H

Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain  $< -0.5$  in. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.

☒ H

Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.  
SOAK TIMES and TEMPERATURES will vary from test to test.

\*\* USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS

### COOL-DOWN

Initial and record time for each item.

☒ H

Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

☒ H

STOP "OXIDIZER" and "AIR BLOWER"

☒ H

STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

\*\* FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.

# HOURLY DATA LOG 01

Date: 8 MARCH 96

Time: \_\_\_\_\_

Test Number: 17A

Ramp-Up Rate: 300°/HR

Soak Time: 2 HRS

Soak Temp: 600°

| Tag | Description | Unit | 1100 | 1138<br><del>1200</del> | 1200 | 1230 | 1300 | 1330 | 1400 | 1430 | 1500 |  |  |  |  |  |  |  |  |
|-----|-------------|------|------|-------------------------|------|------|------|------|------|------|------|--|--|--|--|--|--|--|--|
|-----|-------------|------|------|-------------------------|------|------|------|------|------|------|------|--|--|--|--|--|--|--|--|

Time:

## FURNACE

|         |                                 |        |       |       |       |       |       |       |       |       |       |  |  |  |  |  |  |  |
|---------|---------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|--|--|--|--|--|
| MIT-232 | Fuel Gas Pressure               | In. WC | 3.95  | 11.6  | 12.08 | 12.66 | 12.49 | 12.09 | 11.79 | 11.82 | 3.91  |  |  |  |  |  |  |  |
| MIT-231 | Fuel Gas Flow                   | CFH    | 0     | 99    | 129   | 180   | 163   | 138   | 123   | 120   | 8     |  |  |  |  |  |  |  |
| MIT-222 | Combustion Air Pressure         | In. WC | 24.72 | 25.86 | 25.91 | 25.85 | 25.76 | 25.69 | 25.71 | 25.63 | 24.35 |  |  |  |  |  |  |  |
| MIT-221 | Combustion Air Flow             | CFH    | 12339 | 10377 | 10178 | 10080 | 10102 | 10119 | 10180 | 10178 | 12220 |  |  |  |  |  |  |  |
| MIT-168 | Chamber Pressure                | In. WC | -34   | -22   | -17   | -13   | -13   | -12   | -13   | -13   | -25   |  |  |  |  |  |  |  |
| TIT-201 | Recorder Temperature            | Deg. F | 32    | 261   | 380   | 562   | 646   | 622   | 609   | 613   | 407   |  |  |  |  |  |  |  |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg. F | 33    | 205   | 301   | 456   | 543   | 547   | 545   | 551   | 373   |  |  |  |  |  |  |  |
| TIT-203 | Material Thermocouple #1        | Deg. F | 45    | 166   | 284   | 470   | 619   | 624   | 619   | 621   | 543   |  |  |  |  |  |  |  |
| TIT-204 | Material Thermocouple #2        | Deg. F | 29    | 160   | 248   | 412   | 545   | 575   | 577   | 575   | 462   |  |  |  |  |  |  |  |
| TIT-205 | Material Thermocouple #3        | Deg. F | 32    | 256   | 369   | 546   | 628   | 620   | 636   | 635   | 391   |  |  |  |  |  |  |  |
| TIT-206 | Material Thermocouple #4        | Deg. F | 32    | 252   | 366   | 543   | 627   | 611   | 594   | 599   | 377   |  |  |  |  |  |  |  |
| TIT-207 | Material Thermocouple #5        | Deg. F | 32    | 282   | 412   | 608   | 686   | 654   | 644   | 638   | 396   |  |  |  |  |  |  |  |
|         | Material Temp Avg               |        | 34    | 223   | 336   | 516   | 621   | 617   | 614   | 613   | 430   |  |  |  |  |  |  |  |

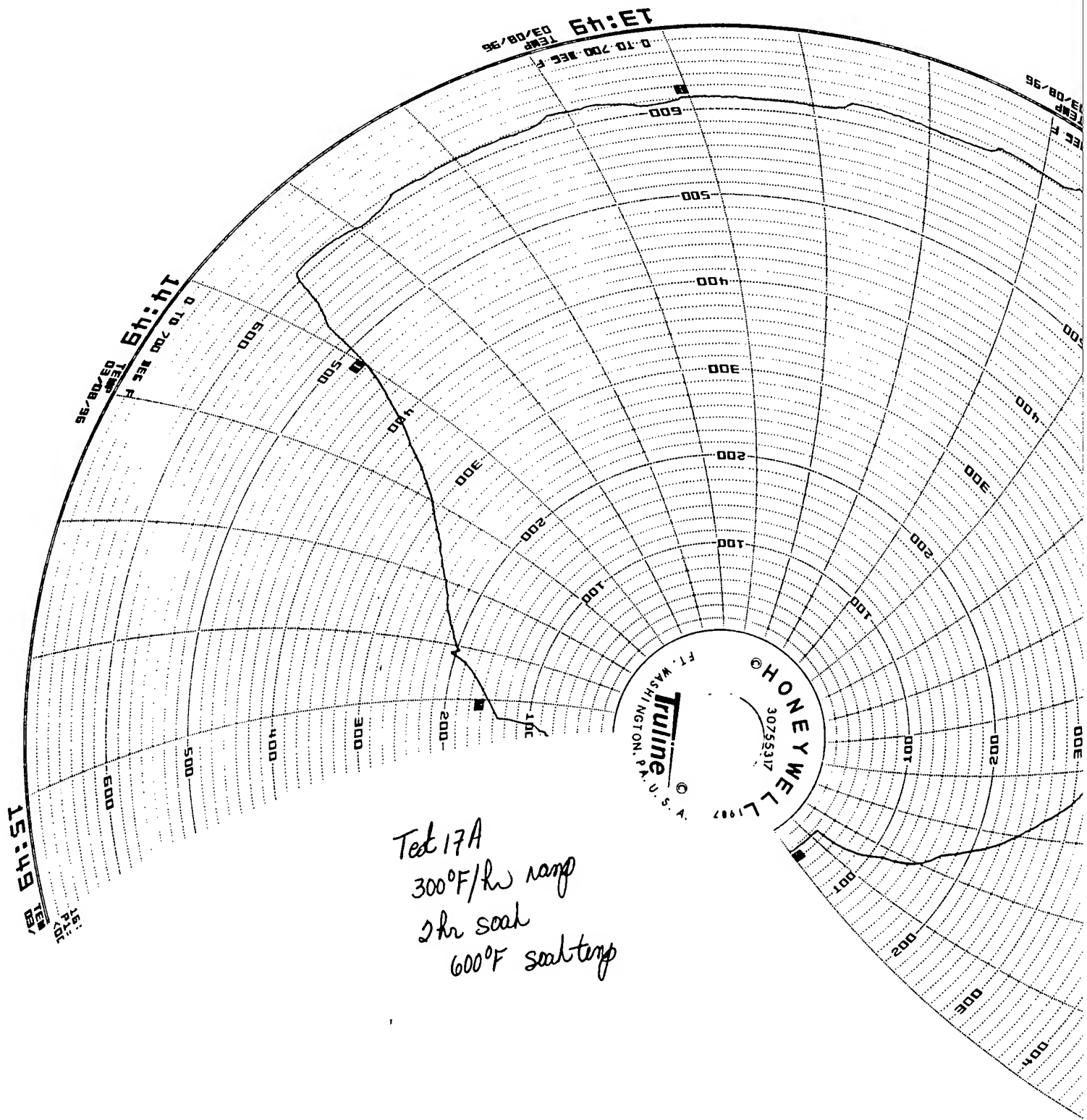
## AFTERBURNER

|         |                                  |        |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |  |
|---------|----------------------------------|--------|------|------|------|------|------|------|------|------|------|--|--|--|--|--|--|--|
| TIT-131 | Combustor Burner Temp. Control   | Deg. F | 1452 | 1841 | 1827 | 1836 | 1820 | 1850 | 1839 | 1812 | 1827 |  |  |  |  |  |  |  |
| MIT-148 | Furnace Flow                     | CFH    | 2181 | 1989 | 2007 | 2008 | 2063 | 2060 | 2040 | 2032 | 2865 |  |  |  |  |  |  |  |
| MIT-151 | Furnace Pressure (Furnace-Draft) | In. WC | .40  | .26  | .24  | .21  | .19  | .20  | .20  | .22  | .85  |  |  |  |  |  |  |  |
| TIT-145 | Combustor Temperature            | Deg. F | 1509 | 1841 | 1846 | 1842 | 1841 | 1837 | 1825 | 1820 | 1836 |  |  |  |  |  |  |  |
| MIT-133 | Fuel Pressure                    | PSIG   | .85  | .59  | .53  | .47  | .38  | .37  | .32  | .39  | .74  |  |  |  |  |  |  |  |
| TIT-121 | Fuel Gas Flow                    | CFH    | 1096 | 815  | 769  | 656  | 623  | 600  | 508  | 631  | 972  |  |  |  |  |  |  |  |
| TIT-100 | Fan Inlet Temp                   |        | 35   | 191  |      | 427  | 512  | 523  | 524  | 528  | 367  |  |  |  |  |  |  |  |

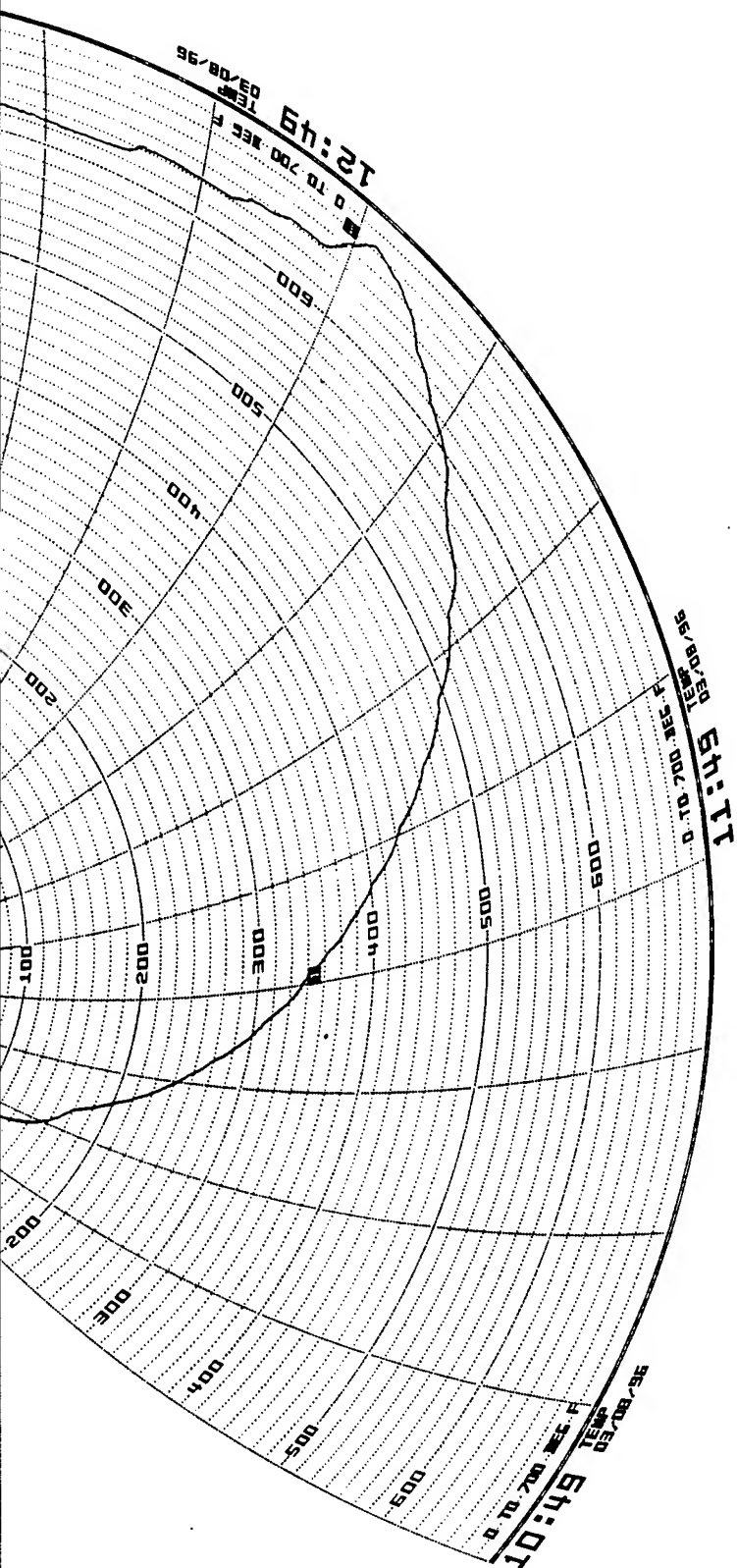
## CEM

|                 |                          |        |       |       |       |       |       |       |       |       |       |  |  |  |  |  |  |  |
|-----------------|--------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|--|--|--|--|--|
| NOx-B           | Interconnecting Duct NOx | ppm    | -1.1  | 2.5   | 6.2   | 16.2  | 11.9  | 7.1   | 7.0   | 7.0   | 1.9   |  |  |  |  |  |  |  |
| THC-B           | Interconnecting Duct THC | ppm    | 13.4  | 420   | 35.9  | 28.6  | 22.6  | 21.9  | 24.1  | 24.6  | 0.8   |  |  |  |  |  |  |  |
| CO              | Stack's CO               | ppm    | 1.0   | .5    | 0.0   | 0.5   | .5    | .5    | 0.0   | 0.0   | 0.0   |  |  |  |  |  |  |  |
| THC             | Stack's THC              | ppm    | .1    | 0.0   | .1    | .1    | .2    | .1    | .1    | .1    | .1    |  |  |  |  |  |  |  |
| NOx NO          | Stack's NOx Duct         | ppm    | -14   | .9    | 3.9   | 15.1  | 12.4  | 6.0   | 5.5   | 5.1   | .6    |  |  |  |  |  |  |  |
| SO2             | Stack SO2                | ppm    | 3.0   | 3.0   | 3.0   | 2.5   | 2.5   | 2.5   | 3.0   | 3.0   | 3.0   |  |  |  |  |  |  |  |
| O2              | Stack's O2               | %      | 12.83 | 11.40 | 11.07 | 10.52 | 10.55 | 12.05 | 15.52 | 15.5  | 15.6  |  |  |  |  |  |  |  |
| CO2             | Stack's CO2              | %      | 5.42  | 6.32  | 6.60  | 6.96  | 6.88  | 5.78  | -1.14 | -1.18 | -1.18 |  |  |  |  |  |  |  |
| TIT-300         | Ambient Temp             | Deg. F | 29    | 29    | 29    |       | 29    | 30    | 30    | 32    | 29    |  |  |  |  |  |  |  |
| Weather Service | Relative Humidity        | %      | 55    | 58    | 58    |       | 46    | 40    | 40    | 49    | 43    |  |  |  |  |  |  |  |





①



# Pre - START-UP (1 of 3)

Date:

9 MAR 94

Time:

Test Number:

17B

Ramp-Up Rate:

300°F/hr

Soak Time:

2 hr

Soak Temp:

600°F

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☐ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc have been returned to a position capable of sustaining system operations.

## ELECTRICAL

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

Furnace Combustion Blower (M-220)

Afterburner Combustion Blower (M-130)

Afterburner I.D Fan (M-158)

Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after all motors have been "BUMPED" to verify operations

## Calibrate CEM

CAL - FM

Interconnecting Duct - NOx

Interconnecting Duct - THC

Stack NOx

Stack SO2

Stack THC

Stack CO

Stack O2

Stack CO

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

## Datalogger/Computer is ON

Record Time (Computer Clock)

Record Ambient Temperature (TIT-300)

Record Ambient Humidity (call Weather Service 664-3010 or 945-7000)

## Pre - Spike Activities

Lock-out all Motors: Complete Exclusion Log

Secure Equipment Pad and Access Road w/ Chains

Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Test Number 178  
 Ramp-Up Rate: \_\_\_\_\_  
 Soak Time: \_\_\_\_\_  
 Soak Temp: \_\_\_\_\_

Date: 8<sup>th</sup> MAR, 94  
 Time: \_\_\_\_\_

## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack-bin, provide a description in terms of contents, appearance, moisture, etc.  
 Refer to loading procedures for instructions.

#### #1 Rack A's Characteristics

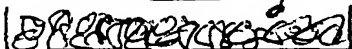
Initial Wt. (lbs) Final Wt. (lbs)

2028

Materials

Initial Wt. (lbs)

Final Wt. (lbs)



pic  
Tin



#4

\*\* Secure pipe to prevent pipes from rolling

Take Pictures

#### #2 Rack B's Characteristics

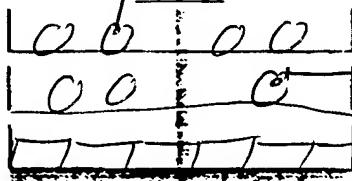
Initial Wt. (lbs) Final Wt. (lbs)

1494

Materials

Initial Wt. (lbs)

Final Wt. (lbs)

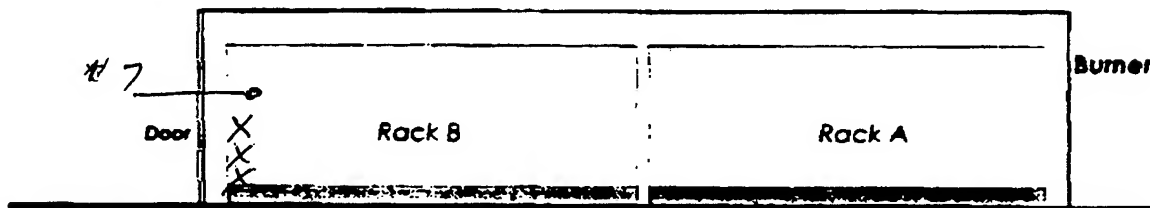


#6

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
 CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
 Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



### ☐ Roll Calls and Close Furnace Door

Verify all site personnel are accounted for.  
 Have each person initial this checklist at left.  
 Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## IRT-UP (3 of 3)

ate: \_\_\_\_\_  
me: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### BURNER START-UP

Initial and record time for each item.

Start "I.D. FAN". Adjust fan speed to maintain a system draft  $< -0.5$  in. WC

Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain  $< -0.5$  in. WC

Start "OXIDIZER" (Burner). Adjust fan speed to maintain  $< -0.5$  in. WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

Start "DATALOGGER" Pushbuttons on the Computer.

Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain  $< -0.5$  in. WC

@ 600 F: \_\_\_\_\_ Time: \_\_\_\_\_

@ 1200 F: \_\_\_\_\_ Time: \_\_\_\_\_

@ 1800 F: \_\_\_\_\_ Time: \_\_\_\_\_

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature

1800°F and system draft @  $< -0.5$  in. WC.

### RNACE START-UP

Initial and record time for each item.

Set Bleed Air Damper to 75%

Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain  $< -0.5$  in. WC

Set Controller to "MANUAL". Set controller output to 0.0

Turn Furnace Key to "BURNER" Position.

Verify "INTERLOCK OK" light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire

Open Bleed Air Valve to 100%

Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain  $< -0.5$  in. WC, afterburner temp @ 1800 Deg F, and furnace temp @, SOAK temperature.

Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS

### SHUT-DOWN

Initial and record time for each item.

Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

STOP "OXIDIZER" and "AIR BLOWER"

STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "K" OF HASP.

## HOURLY DATA LOG ( of )

Date: 8 MAR. 96

**Time:**

Test Number: 17B

**Ramp-Up Rate:** 300°F/hr

Sent Time: 2 hr

Soak Temp: 600°F

| Tag | Description | Unit                     |
|-----|-------------|--------------------------|
|     |             | 2000 2030 2100 2130 2200 |

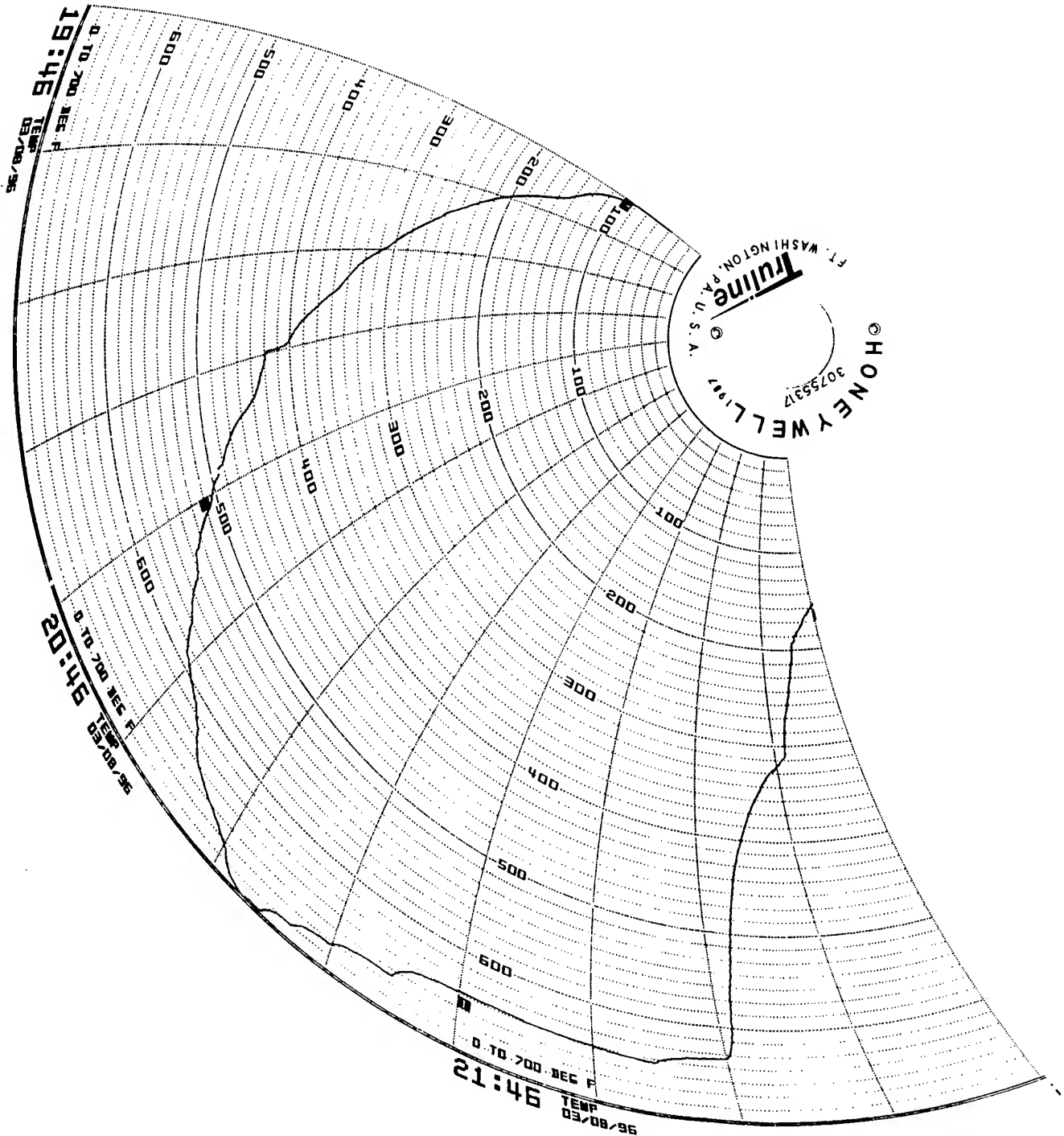
**Time:****FURNACE**[illegible]

## AFTERBURNER

[illegible]**CEN**[illegible]

Test 17 B  
 300°F/hr ramp  
 2hr soak  
 600°F soak temp

19:46  
 PL-14  
 1008:003  
 03/08/96  
 WEST



# Pre - START-UP (1 of 3)

Date: 11 MAR 96

Time: \_\_\_\_\_

Test Number: 17C

Ramp-Up Rate: 300°F/hr

Soak Time: 2 HR

Soak Temp: 600°F

## MECHANICAL

Initial each item.

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☐ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc have been returned to a position capable of sustaining system operations.

## ELECTRICAL

Initial each item.

- ☒ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☒ Furnace and Afterburner Control Breakers are ON.
- ☒ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☒ BUMP Motors and switch to "AUTO"

- \_\_\_\_\_ Furnace Combustion Blower (M-220)
- \_\_\_\_\_ Afterburner Combustion Blower (M-130)
- \_\_\_\_\_ Afterburner I.D. Fan (M-158)
- \_\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after all motors have been "BUMPED" to verify operations

## Calibrate CEM

- ☒ Interconnecting Duct - NOx
- ☒ Interconnecting Duct - THC
- ☒ Stack NOx Duct NO
- ☒ Stack SO<sub>2</sub>
- ☒ Stack THC
- ☒ Stack CO
- ☒ Stack O<sub>2</sub>
- ☒ Stack CO<sub>2</sub>

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
| 75.6        | 75              | <del>Y</del> N   |
| 60.1        | 60              | N                |
| 75.6        | 75              | Y                |
| 126.4       | 126             | N                |
| 60.1        | 60              | N                |
| 399.4       | 399             | Y                |
| 19.0        | 19.0            | Y                |
| 19.0        | 19.0            | Y                |

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

## Datalogger/Computer is ON

- \_\_\_\_\_ Record Time (Computer Clock)
- \_\_\_\_\_ Record Ambient Temperature (TTT-300)
- \_\_\_\_\_ Record Ambient Humidity (call Weather Service 664-3010 or 945-7000)

## Pre - Spike Activities

- \_\_\_\_\_ Lock-out all Motors: Complete Exclusion Log
- \_\_\_\_\_ Secure Equipment Pad and Access Road w/ Chains
- \_\_\_\_\_ Spike Test Materials and Furnace Test Plates



# LOADING/UNLOADING (2 of 3)

Test Number 17 C  
 Ramp-Up Rate: \_\_\_\_\_  
 Soak Time: \_\_\_\_\_  
 Soak Temp: \_\_\_\_\_

Date: 11 MAR 94  
 Time: \_\_\_\_\_

## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack bin, provide a description in terms of contents, appearance, moisture, etc.  
 \*\* Refer to loading procedures for instructions.

#1 Rack A's Characteristics

Initial Wt. (lbs) 2028 Final Wt. (lbs) \_\_\_\_\_



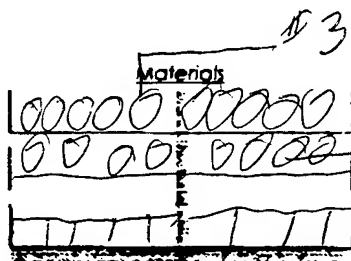
Initial Wt. (lbs) \_\_\_\_\_ Final Wt. (lbs) \_\_\_\_\_

\*\* Secure pipe to prevent pipes from rolling

Take Pictures

#2 Rack B's Characteristics

Initial Wt. (lbs) 1494 Final Wt. (lbs) \_\_\_\_\_

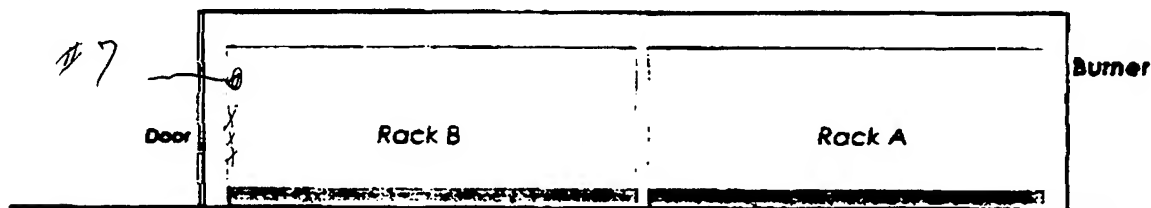


Initial Wt. (lbs) \_\_\_\_\_ Final Wt. (lbs) \_\_\_\_\_

Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks  
 CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris  
 Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



### ☐ Roll Cots and Close Furnace Door

Verify all site personnel are accounted for.  
 Have each person initial this checklist at left  
 Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

# IRT-UP (3 of 3)

ate: \_\_\_\_\_  
me: \_\_\_\_\_

Rmp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

## BURNER START-UP

Initial and record time for each item.

Start "I.D. FAN". Adjust fan speed to maintain a system draft  $< -0.5$  in. WC

Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain  $< -0.5$  in. WC

Start "OXIDIZER" (Burner). Adjust fan speed to maintain  $< -0.5$  in. WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

Start "DATALOGGER" Pushbuttons on the Computer.

Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain  $< -0.5$  in. WC

@ 600 F. :Time:

@ 1200 F. :Time:

@ 1800 F. :Time:

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature

1800°F and system draft @  $< -0.5$  in. WC.

## RNACE START-UP

Initial and record time for each item.

Set Bleed Air Damper to 75%

Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain  $< -0.5$  in. WC

Set Controller to "MANUAL". Set controller output to 0.0

Turn Furnace Key to "BURNER" Position.

Verify "INTERLOCK OK" light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire

Open Bleed Air Valve to 100%

Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain  $< -0.5$  in. WC, afterburner temp @ 1800 Deg F, and furnace temp @, SOAK temperature.

Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS

## SHUT-DOWN

Initial and record time for each item.

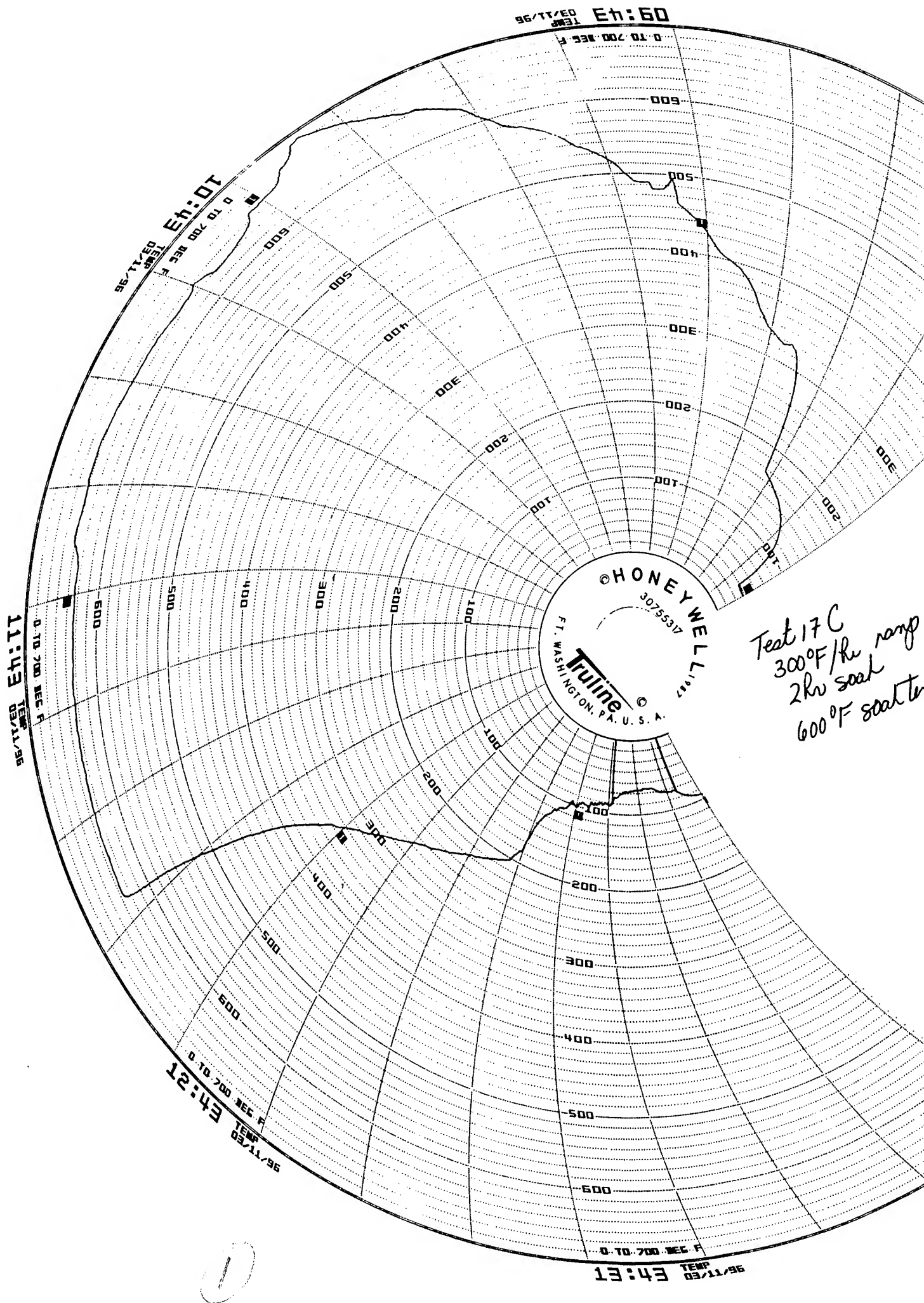
Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

STOP "OXIDIZER" and "AIR BLOWER"

STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "X" OF HASP.





Test 17C  
300°F/hr ramp  
2hr soak  
600°F soak

96/TT/ED  
TEMP  
0 TO 700 REC F  
Eh:60

96/TT/ED  
JMS1  
0 TO 700 REC  
Eh:80

96/TT/ED  
JMS1  
0 TO 700 REC  
Eh:80

Test 17C  
300°F/hr ramp  
2hr soak  
600°F soak temp

HONEYWELL  
30755317  
Truline  
FT. WASHINGTON, PA. U.S.A.

96/TT/ED  
TEMP  
0 TO 700 REC F  
Eh:13

# Pre - START-UP (1 of 3)

Date: MAR 11 96  
Time: 1500

Test Number: 18 HOT DECON  
Ramp-Up Rate: 300°F/hr  
Soak Time: 2 HR  
Soak Temp: 600°F

## MECHANICAL

Initial each item

- ☒ Inspection doors/manways are SECURED
- ☒ Gas Valves OPEN
- ☒ View/Inspection Ports CLOSED
- ☒ Record Gas (Propane) Valve Position

Verify all valves, doors, inspection ports, manway, etc  
have been returned to a position capable of sustaining  
system operations.

## ELECTRICAL

Initial each item.

- ☐ All Lockout/Tagouts (1-5) are ACCOUNTED.
- ☐ Furnace and Afterburner Control Breakers are ON.
- ☐ Verify Emergency Pushbuttons are NOT ENGAGED.
- ☐ BUMP Motors and switch to "AUTO"

\_\_\_\_\_ Furnace Combustion Blower (M-220)  
\_\_\_\_\_ Afterburner Combustion Blower (M-130)  
\_\_\_\_\_ Afterburner I.D Fan (M-158)  
\_\_\_\_\_ Place Afterburner Switch in REMOTE

Verify field selector switches are in "AUTO" after  
all motors have been "BUMPED" to verify operations

- ☐ Calibrate CEM

\_\_\_\_\_ Interconnecting Duct - NOx  
\_\_\_\_\_ Interconnecting Duct - THC  
\_\_\_\_\_ Stack NOx  
\_\_\_\_\_ Stack SO2  
\_\_\_\_\_ Stack THC  
\_\_\_\_\_ Stack CO  
\_\_\_\_\_ Stack O2  
\_\_\_\_\_ Stack CO

| Tank Values | Recorded Values | Adjustment (Y/N) |
|-------------|-----------------|------------------|
|-------------|-----------------|------------------|

\*\* Verify that all regulators for Calibration Gas Tanks are CLOSED

- ☐ Datalogger/Computer is ON

\_\_\_\_\_ Record Time (Computer Clock)  
\_\_\_\_\_ Record Ambient Temperature (TTT-300)  
\_\_\_\_\_ Record Ambient Humidity (call Weather Service 664-3010 or 945-7000)

- ☐ Pre - Spike Activities

\_\_\_\_\_ Lock-out all Motors: Complete Exclusion Log  
\_\_\_\_\_ Secure Equipment Pad and Access Road w/ Chains  
\_\_\_\_\_ Spike Test Materials and Furnace Test Plates

# LOADING/UNLOADING (2 of 3)

Test Number

Ramp-Up Rate:

Soak Time:

Soak Temp:

Date:

Time:

## FIELD ACTIVITIES

Initial each item.

### ☐ Load Furnace with Materials and Thermocouples

For each rack bin, provide a description in terms of contents, appearance, moisture, etc

\*\* Refer to loading procedures for instructions.

#1 Rock A's Characteristics  
600 LBS

Initial Wt. (lbs)

Final Wt. (lbs)

Materials

Initial Wt. (lbs)

Final Wt. (lbs)

\*\* Secure pipe to prevent pipes from rolling

Take Pictures

Rack B's Characteristics:

Initial Wt. (lbs)

Final Wt. (lbs)

Materials

Initial Wt. (lbs)

Final Wt. (lbs)

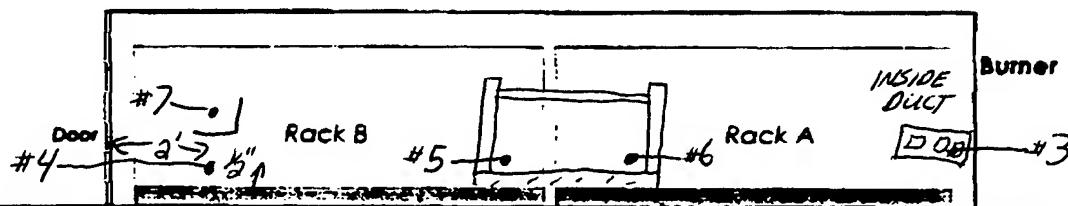
Take Pictures

\*\* SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinder Blocks

CP-Contaminated Steel Pipe, CC-Cont. Clay Pipe, CD-Cont. Debris

Total Weight of the two racks must be less than 3,000 Lbs.

### ☐ Mark Locations of Thermocouples



### ☐ Roll Cots and Close Furnace Door

Verify all site personnel are accounted for.

Have each person initial this checklist at left

Close and secure furnace door.

### ☐ Complete Spike Sample Weigh Sheet

\*\* SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

## ART-UP (3 of 3)

date: \_\_\_\_\_  
me: \_\_\_\_\_

Ramp-Up Time: \_\_\_\_\_  
Soak Time: \_\_\_\_\_  
Soak Temp: \_\_\_\_\_

### BURNER START-UP

Initial and record time for each item.

Start "I.D. FAN". Adjust fan speed to maintain a system draft  $< -0.5$  in. WC

Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain  $< -0.5$  in. WC

Start "OXIDIZER" (Burner). Adjust fan speed to maintain  $< -0.5$  in. WC

Once the burner has started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

Start "DATALOGGER" Pushbuttons on the Computer.

Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain  $< -0.5$  in. WC

@ 600 F. \_\_\_\_\_ Time: \_\_\_\_\_

@ 1200 F. \_\_\_\_\_ Time: \_\_\_\_\_

@ 1800 F. \_\_\_\_\_ Time: \_\_\_\_\_

Once the burner is at low fire, burner control will be released to the operator.

The operator must adjust gas flow and ID fan speed to maintain temperature 1800°F and system draft @  $< -0.5$  in. WC.

### FURNACE START-UP

Initial and record time for each item.

Set Bleed Air Damper to 75%

Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain  $< -0.5$  in. WC

Set Controller to "MANUAL". Set controller output to 0.0

Turn Furnace Key to "BURNER" Position.

Verify "INTERLOCK OK" Light is energized.

Once the burner started, the control system will initiate a purge sequence.

The pilot will then attempt to light the burner at low fire.

Open Bleed Air Valve to 100%

Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.  
Record Furnace temperatures during ramp-up hourly, on the control room log sheet.

Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain  $< -0.5$  in. WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.

Manually Log Operating Parameters.

Use the attached Log Sheet to record all operating parameters at least hourly.

SOAK TIMES and TEMPERATURES will vary from test to test.

USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS

### SHUT-DOWN

Initial and record time for each item.

Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

STOP "OXIDIZER" and "AIR BLOWER"

STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

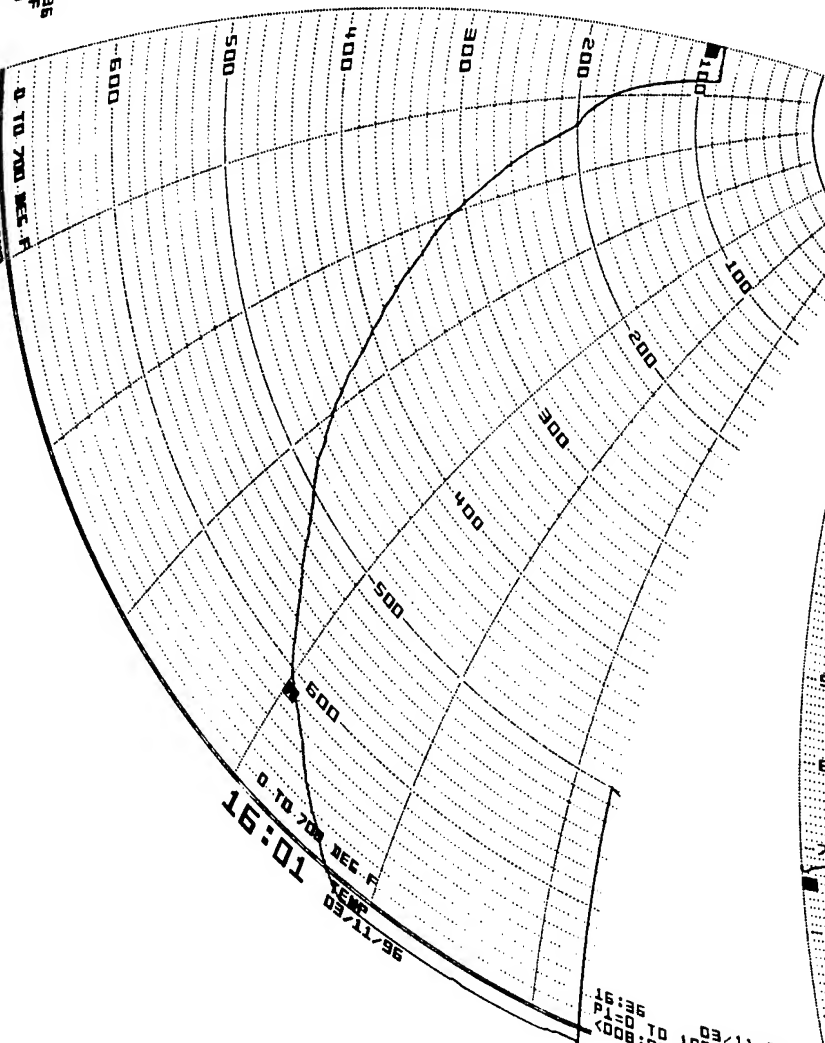
FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "K" OF HASP.





14:58  
P1:00 TO 700 DEG F  
<008:008> WESTON  
03/11/96

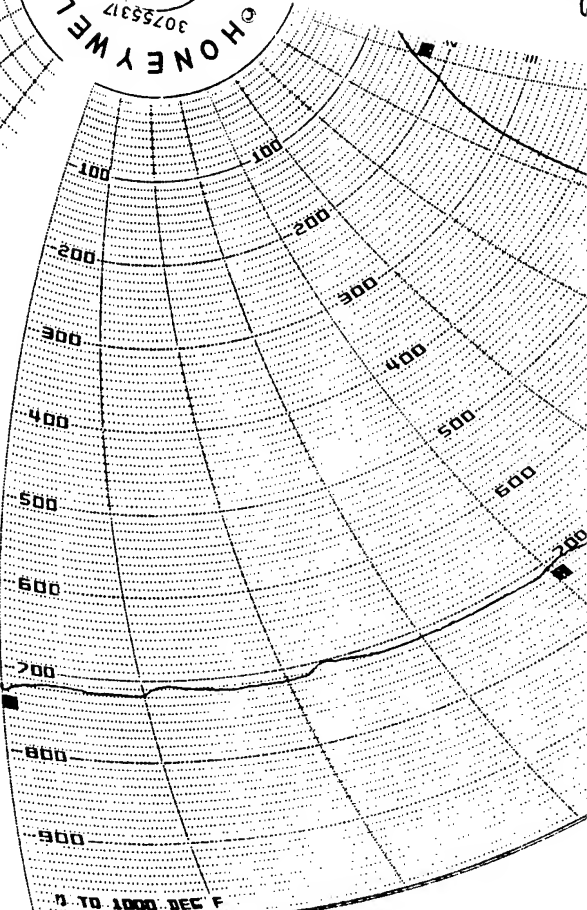
15:00 TEMP  
03/11/96



16:01 TEMP  
03/11/96

16:36  
P1:00 TO 1000 DEG F  
<008:008> WESTON  
03/11/96

HONEYWELL  
30755317  
Ft. WASHINGTON, PA. U.S.A.  
Truline

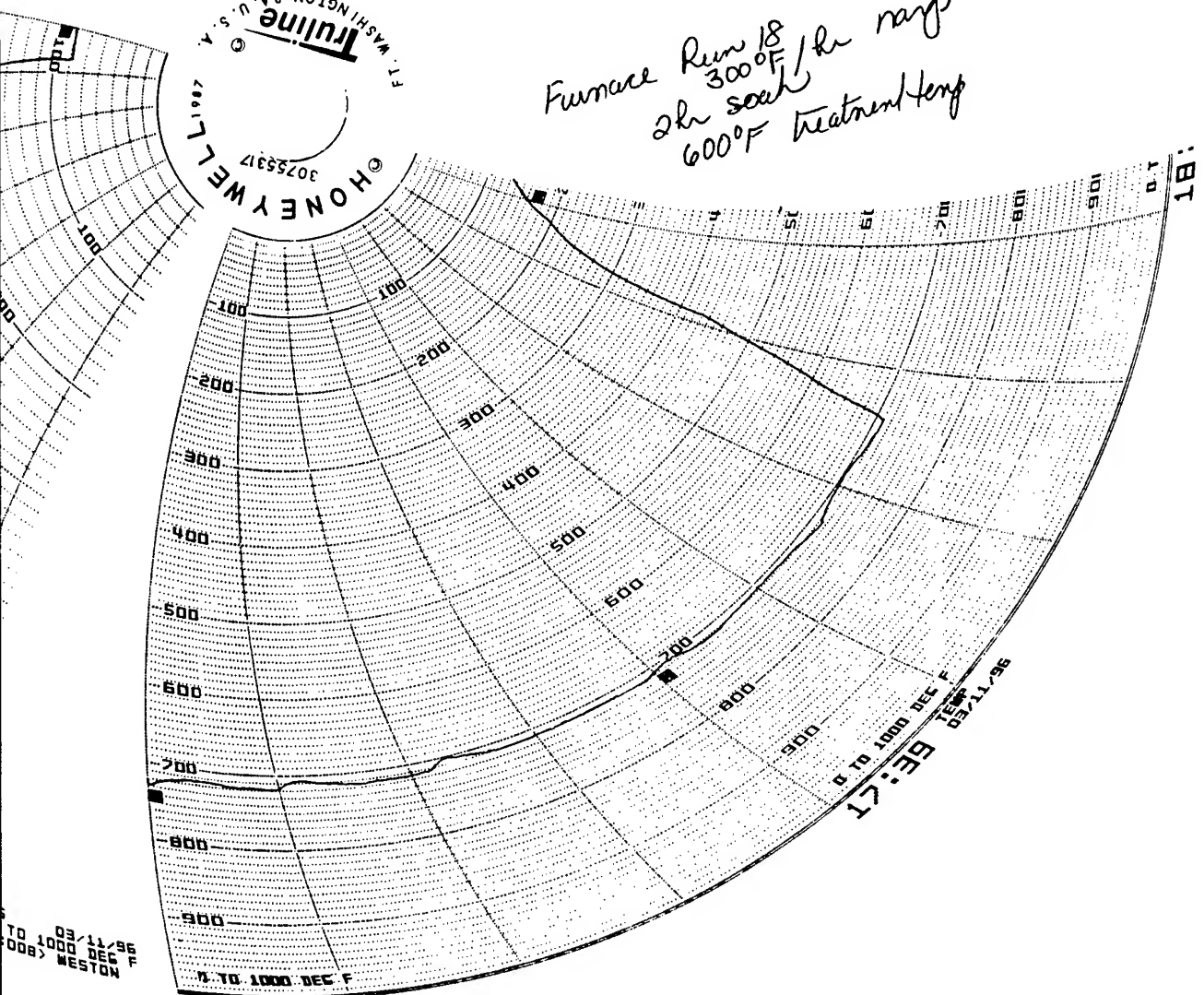


16:38 TEMP  
03/11/96

Furnace  
28

Truline  
 30755317  
 © HONEYWELL  
 FT. WASHINGTON, PA. U.S.A.

Furnace Run 18  
 300°F/hr ramp  
 2hr soak  
 600°F treatment temp



TO 1000 DEC F  
 008 WESTON

16:38 TEMP  
 03/11/96

17:39  
 03/11/96  
 008 WESTON

(R)

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**APPENDIX G**

**SUMMARY OF DATA SHEETS FOR TEST RUNS 1-15**

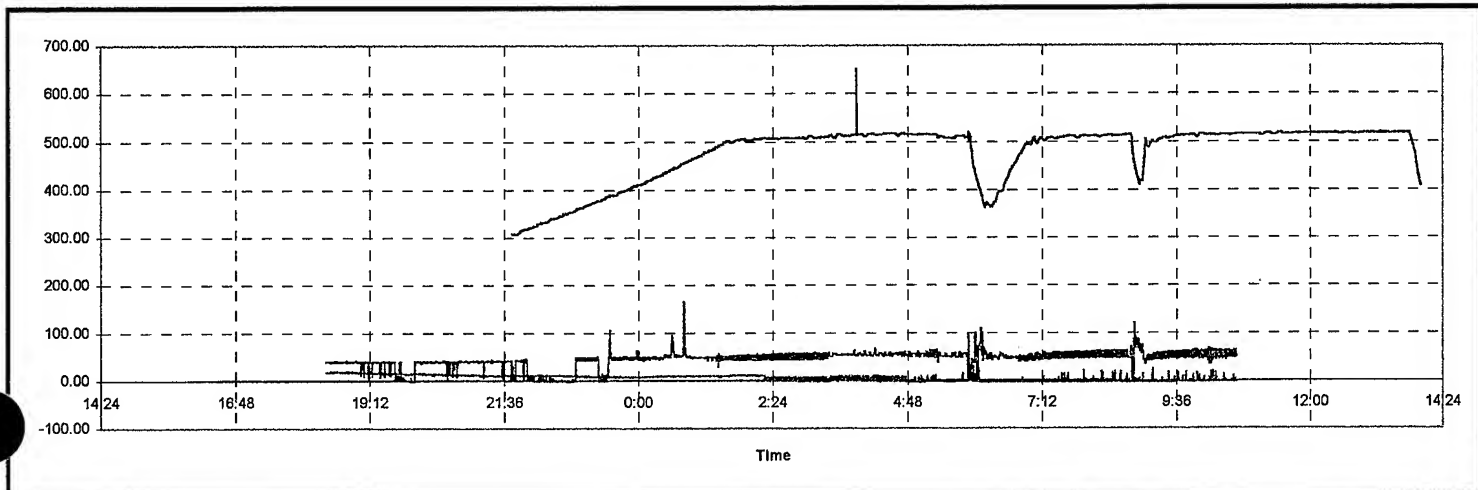
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# SUMMARY OF DATA

Date: 6-Feb-96  
Time: 12:28

Test Number: 1  
Soak Time: 12 Hrs  
Soak Temp: Greater than 500 F

|           |                                 |        | 16:30  |        |        |       | 16:32  |        |        |        | 1:32   |        |        |       | 13:50  |        |        |       | 14:30 |  |  |  |
|-----------|---------------------------------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|-------|-------|--|--|--|
|           |                                 |        | WARM   |        |        |       | RAMP   |        |        |        | SOAK   |        |        |       | COOL   |        |        |       |       |  |  |  |
| Tag       | Parameter Description           | Unit   | Min    | Max    | Ave    | Std   | Min    | Max    | Ave    | Std    | Min    | Max    | Ave    | Std   | Min    | Max    | Ave    | Std   |       |  |  |  |
| FURNACE   |                                 |        |        |        |        |       |        |        |        |        |        |        |        |       |        |        |        |       |       |  |  |  |
| PIT-232   | Fuel Gas Pressure               | In.WC  | -0.11  | 33.96  | 3.31   | 10.77 | -0.10  | 45.13  | 28.44  | 10.43  | -0.16  | 68.30  | 34.46  | 7.66  | -0.23  | 16.90  | 1.00   | 4.12  |       |  |  |  |
| FIT-231   | Fuel Gas Flow                   | CFH    | 175.13 | 201.18 | 198.27 | 8.13  | 166.68 | 200.93 | 172.57 | 5.88   | 164.58 | 202.00 | 169.51 | 6.13  | 176.43 | 201.58 | 197.66 | 5.73  |       |  |  |  |
| PIT-222   | Combustion Air Pressure         | In.WC  | 23.82  | 25.12  | 23.96  | 0.41  | 23.79  | 25.55  | 25.23  | 0.30   | 23.60  | 25.45  | 25.13  | 0.31  | 23.26  | 24.65  | 23.55  | 0.30  |       |  |  |  |
| FIT-221   | Combustion Air Flow             | CFH    | 725    | 1898   | 847    | 370   | 733    | 2214   | 1971   | 257    | 639    | 2313   | 2051   | 265   | 602    | 1711   | 782    | 254   |       |  |  |  |
| PIT-158   | Chamber Pressure (Draft)        | In.WC  | -0.38  | -0.10  | -0.31  | 0.08  | -0.51  | -0.10  | -0.32  | 0.03   | -0.89  | 0.00   | -0.48  | 0.06  | -1.00  | -0.09  | -0.41  | 0.14  |       |  |  |  |
| TIT-201   | Recorder Temperature            | Deg.F  | 36.30  | 36.68  | 36.47  | 0.11  | 45.30  | 551.03 | 323.88 | 130.86 | 304.20 | 570.45 | 536.58 | 43.26 | 183.30 | 512.85 | 293.80 | 89.40 |       |  |  |  |
| TIT-202   | Furnace Exit Gas Temp (Control) | Deg.F  | 36.45  | 36.75  | 36.59  | 0.12  | 44.78  | 554.78 | 326.58 | 131.69 | 302.70 | 575.48 | 539.38 | 44.00 | 183.30 | 514.65 | 293.01 | 89.69 |       |  |  |  |
| TIT-203   | Material Thermocouple #1        | Deg.F  | 36.23  | 36.75  | 36.44  | 0.15  | 37.05  | 510.8  | 277.62 | 123.14 | 372.90 | 1200.0 | 511.35 | 28.82 | 248.63 | 507.68 | 386.05 | 80.95 |       |  |  |  |
| TIT-204   | Material Thermocouple #2        | Deg.F  | 34.20  | 34.58  | 34.39  | 0.10  | 36.68  | 447.98 | 240.37 | 104.64 | 366.00 | 523.28 | 470.16 | 22.72 | 289.95 | 488.40 | 370.62 | 57.96 |       |  |  |  |
| TIT-205   | Material Thermocouple #3        | Deg.F  | 35.40  | 35.70  | 35.54  | 0.10  | 40.20  | 485.78 | 267.34 | 115.90 | 355.88 | 528.83 | 502.46 | 29.19 | 242.33 | 493.80 | 343.92 | 69.69 |       |  |  |  |
| TIT-206   | Material Thermocouple #4        | Deg.F  | 36.08  | 36.45  | 36.20  | 0.12  | 40.20  | 524.40 | 301.07 | 129.08 | 360.68 | 532.58 | 518.41 | 32.49 | 235.20 | 520.28 | 363.77 | 86.51 |       |  |  |  |
| TIT-207   | Material Thermocouple #5        | Deg.F  | 35.85  | 36.23  | 36.02  | 0.11  | 43.73  | 533.48 | 300.92 | 127.23 | 293.70 | 560.03 | 520.21 | 42.73 | 181.65 | 495.00 | 283.93 | 83.25 |       |  |  |  |
| COMBURNER |                                 |        |        |        |        |       |        |        |        |        |        |        |        |       |        |        |        |       |       |  |  |  |
| TIT-131   | Combustor Burner Temp. Control  | Deg. F | 1794   | 1810   | 1805   | 5     | 1145   | 1850   | 1809   | 46     | 1358   | 1850   | 1797   | 41    | 1181   | 1815   | 1755   | 99    |       |  |  |  |
| FIT-149   | Fumes Flow                      | PPH    | 2203   | 2403   | 2258   | 73    | 15     | 3376   | 594    | 585    | 48     | 614    | 408    | 55    | 38     | 525    | 381    | 73    |       |  |  |  |
| PII-151   | Fumes Pressure                  | InWC   | 0.50   | 0.71   | 0.56   | 0.07  | 0.37   | 0.89   | 0.63   | 0.08   | -0.06  | 0.91   | 0.37   | 0.07  | 0.34   | 2.30   | 1.05   | 0.39  |       |  |  |  |
| TIT-145   | Combustor Temperature           | Deg. F | 1796   | 1812   | 1807   | 5     | 1111   | 1850   | 1813   | 49     | 1341   | 1850   | 1804   | 43    | 1156   | 1824   | 1758   | 105   |       |  |  |  |
| PII-133   | Fuel Pressure                   | PSIG   | 0.77   | 0.81   | 0.78   | 0.01  | 0.01   | 0.85   | 0.56   | 0.19   | 0.01   | 0.86   | 0.13   | 0.07  | 0.00   | 0.85   | 0.56   | 0.31  |       |  |  |  |
| FIT-121   | Fuel Gas Flow                   | CFH    | 1041   | 1077   | 1047   | 11    | 1      | 1103   | 863    | 144    | 1      | 1097   | 542    | 90    | 1      | 1098   | 841    | 303   |       |  |  |  |
| CEM       |                                 |        |        |        |        |       |        |        |        |        |        |        |        |       |        |        |        |       |       |  |  |  |
| NOx-B     | Interconnecting Duct NOx        | ppm    | 0.50   | 0.53   | 0.50   | 0.01  | 0.48   | 0.95   | 0.78   | 0.11   | 0.48   | 1.08   | 0.90   | 0.11  | 0.50   | 0.68   | 0.57   | 0.05  |       |  |  |  |
| THC-B     | Interconnecting Duct THC        | ppm    | -1.47  | -1.30  | -1.37  | 0.05  | -1.54  | 100.00 | 14.69  | 7.63   | -3.66  | 37.52  | 0.45   | 4.83  | -2.62  | 46.33  | 0.49   | 7.39  |       |  |  |  |
| CO        | Stack's CO                      | ppm    | -1.00  | -0.50  | -0.55  | 0.16  | -1.00  | 173.00 | 0.07   | 8.07   | -1.00  | 319.00 | 0.27   | 11.44 | -0.50  | 25.50  | 0.02   | 3.06  |       |  |  |  |
| THC       | Stack's THC                     | ppm    | 0.26   | 0.48   | 0.37   | 0.07  | 0.26   | 58.73  | 0.88   | 2.47   | -0.10  | 25.70  | 0.93   | 1.20  | 0.63   | 30.79  | 1.67   | 3.42  |       |  |  |  |
| NOx       | Stack's NOx                     | ppm    | 38.90  | 44.53  | 42.89  | 1.55  | -0.18  | 166.03 | 36.57  | 17.35  | 1.75   | 121.18 | 53.83  | 8.63  | 0.28   | 104.73 | 48.18  | 18.61 |       |  |  |  |
| SO2       | Stack SO2                       | ppm    | -1.00  | 1.50   | 0.10   | 0.77  | -5.00  | -0.50  | -1.89  | 0.49   | -5.50  | -0.50  | -2.36  | 1.04  | -5.50  | -4.50  | -5.05  | 0.30  |       |  |  |  |
| O2        | Stack's O2                      | %      | 12.70  | 12.98  | 12.79  | 0.08  | 10.13  | 21.20  | 12.14  | 0.72   | 6.95   | 21.13  | 12.12  | 1.01  | 11.18  | 21.23  | 14.22  | 1.63  |       |  |  |  |
| CO2       | Stack's CO2                     | %      | 5.20   | 5.38   | 5.34   | 0.05  | 0.12   | 6.90   | 5.70   | 0.44   | 0.16   | 8.94   | 5.69   | 0.63  | 0.10   | 6.26   | 4.39   | 1.01  |       |  |  |  |
| TIT-300   | Ambient Temp                    | Deg. F |        |        |        |       |        |        |        |        |        |        |        |       |        |        |        |       |       |  |  |  |



# CEM DATA FOR VALIDATION TEST#1, #2, and #3

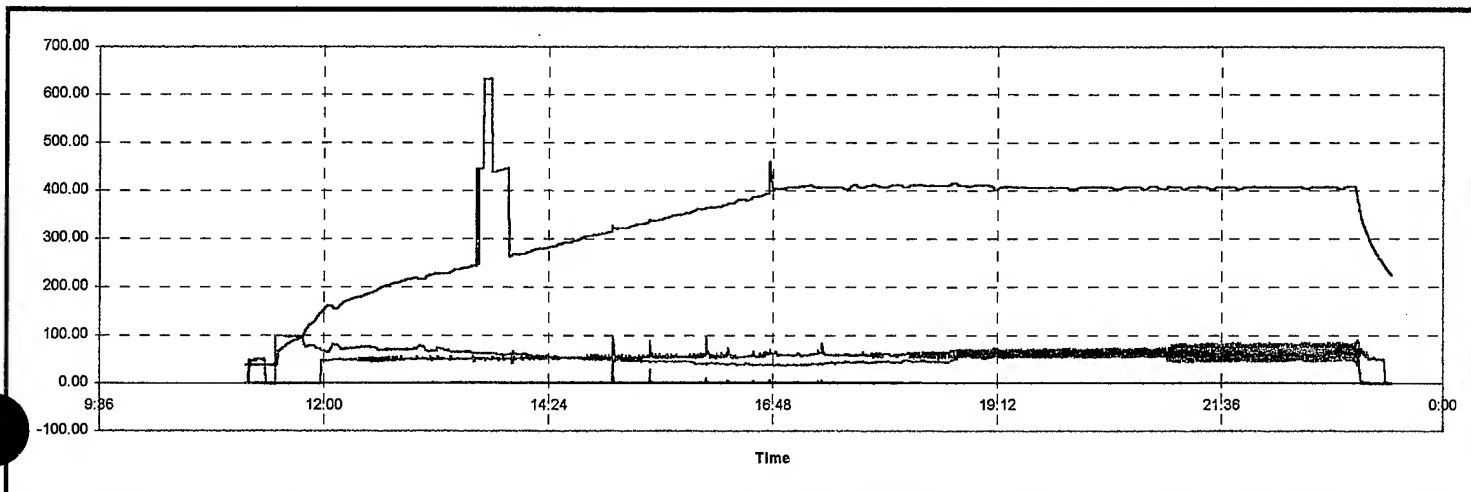
| Stack Testing - Test #1  | Duct_NOX | Duct_THC | Stack_CO | Stack_THC | Stack_NOX | Stack_SO2 | Stack_O2 | Stack_CO2 |
|--------------------------|----------|----------|----------|-----------|-----------|-----------|----------|-----------|
| 1/31/96 18:31 Start Time |          |          |          |           |           |           |          |           |
| Min                      | 0.65     | 7.25     | -1.00    | 0.31      | 0.03      | -5.00     | 11.23    | 5.38      |
| Max                      | 0.95     | 20.19    | -0.50    | 1.24      | 166.03    | -0.50     | 12.63    | 6.62      |
| Average                  | 0.82     | 12.25    | -0.51    | 0.73      | 35.39     | -1.77     | 12.05    | 5.74      |
| Stddev                   | 0.07     | 3.11     | 0.07     | 0.15      | 19.11     | 0.48      | 0.28     | 0.17      |
| 2/1/96 1:22 End Time     |          |          |          |           |           |           |          |           |
| Stack Testing - Test #2  | Duct_NOX | Duct_THC | Stack_CO | Stack_THC | Stack_NOX | Stack_SO2 | Stack_O2 | Stack_CO2 |
| 2/2/96 14:04 Start Time  |          |          |          |           |           |           |          |           |
| Min                      | 1.03     | 37.15    | -1.00    | -0.23     | 49.13     | 0.00      | 10.90    | 5.36      |
| Max                      | 42.53    | 64.23    | 0.00     | 2.34      | 98.80     | 5.00      | 12.73    | 6.48      |
| Average                  | 1.95     | 49.23    | -0.47    | 0.92      | 59.62     | 2.35      | 11.87    | 5.82      |
| Stddev                   | 1.57     | 7.17     | 0.15     | 0.67      | 6.03      | 1.41      | 0.39     | 0.25      |
| 2/2/96 20:43 End Time    |          |          |          |           |           |           |          |           |
| Stack Testing            | Duct_NOX | Duct_THC | Stack_CO | Stack_THC | Stack_NOX | Stack_SO2 | Stack_O2 | Stack_CO2 |
| 2/4/96 14:08 Start Time  |          |          |          |           |           |           |          |           |
| Min                      | 2.45     | 4.54     | -0.50    | -5.07     | 41.70     | 1.00      | 9.73     | 5.00      |
| Max                      | 117.65   | 100.00   | 0.50     | 6.49      | 177.13    | 2.50      | 13.55    | 7.48      |
| Average                  | 4.22     | 77.73    | 0.15     | 1.22      | 63.32     | 1.48      | 11.86    | 6.11      |
| Stddev                   | 4.85     | 22.25    | 0.23     | 5.05      | 8.10      | 0.36      | 0.51     | 0.33      |
| 2/4/96 20:49 End Time    |          |          |          |           |           |           |          |           |

# SUMMARY OF DATA

Date: 7-Feb-96  
Time: 9:00

Test Number: 2  
Soak Time: 6 Hrs  
Soak Temp: Greater than 400 F

| Tag                | Parameter Description           | Unit   | 11:09 |        |       |       | WARM 11:29 |         |        |        | 11:29 RAMP |        |        |       | 16:45  |        |        |       | 16:45 SOAK |     |     |     | 23:03 |     |     |     | 23:03 COOL |     |     |     | 23:04 |     |     |     |
|--------------------|---------------------------------|--------|-------|--------|-------|-------|------------|---------|--------|--------|------------|--------|--------|-------|--------|--------|--------|-------|------------|-----|-----|-----|-------|-----|-----|-----|------------|-----|-----|-----|-------|-----|-----|-----|
|                    |                                 |        | Min   | Max    | Ave   | Std   | Min        | Max     | Ave    | Std    | Min        | Max    | Ave    | Std   | Min    | Max    | Ave    | Std   | Min        | Max | Ave | Std | Min   | Max | Ave | Std | Min        | Max | Ave | Std | Min   | Max | Ave | Std |
| <b>FURNACE</b>     |                                 |        |       |        |       |       |            |         |        |        |            |        |        |       |        |        |        |       |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| PIT-232            | Fuel Gas Pressure               | In.WC  | -0.16 | 37.59  | 1.20  | 6.84  | -0.12      | 45.64   | 25.39  | 5.82   | 16.43      | 37.03  | 28.56  | 2.83  | -0.10  | 13.81  | 13.45  | 3.65  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| FIT-231            | Fuel Gas Flow                   | CFH    | 10.50 | 11.53  | 10.67 | 0.16  | -0.25      | 34.03   | 27.89  | 6.94   | -2.40      | 12.30  | 4.51   | 4.63  | -2.38  | 6.43   | 6.04   | 2.26  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| PIT-222            | Combustion Air Pressure         | In.WC  | 23.44 | 23.56  | 23.50 | 0.03  | 23.44      | 25.43   | 25.06  | 0.25   | 25.24      | 25.66  | 25.48  | 0.08  | 24.10  | 25.29  | 25.25  | 0.28  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| FIT-221            | Combustion Air Flow             | CFH    | 12438 | 12542  | 12499 | 17    | 10475      | 12458   | 10751  | 208    | 10464      | 11327  | 10776  | 118   | 11388  | 12763  | 11403  | 329   |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| PIT-158            | Chamber Pressure (Draft)        | In.WC  | -0.75 | -0.60  | -0.67 | 0.04  | -0.80      | 0.48    | -0.24  | 0.25   | -0.77      | -0.20  | -0.61  | 0.18  | -1.00  | -0.19  | -0.39  | 0.10  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-201            | Recorder Temperature            | Deg.F  | 39.30 | 39.98  | 39.63 | 0.13  | 43.80      | 435.53  | 300.19 | 85.79  | 419.10     | 450.53 | 431.33 | 6.56  | 176.85 | 418.73 | 415.16 | 64.85 |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-202            | Furnace Exit Gas Temp (Control) | Deg.F  | 39.60 | 40.13  | 39.87 | 0.13  | 44.03      | 438.83  | 302.41 | 86.33  | 421.58     | 453.68 | 434.11 | 6.76  | 176.40 | 420.53 | 416.93 | 65.07 |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-203            | Material Thermocouple #1        | Deg.F  | 38.25 | 38.93  | 38.55 | 0.17  | 41.10      | 397.65  | 268.98 | 84.60  | 396.68     | 416.25 | 407.43 | 3.27  | 239.55 | 398.40 | 395.89 | 45.96 |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-204            | Material Thermocouple #2        | Deg.F  | 38.85 | 39.30  | 39.02 | 0.10  | 42.23      | 392.33  | 266.17 | 79.41  | 392.40     | 411.08 | 401.78 | 2.63  | 185.40 | 393.75 | 389.70 | 54.38 |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-205            | Material Thermocouple #3        | Deg.F  | 40.05 | 40.73  | 40.31 | 0.13  | 40.88      | 1200.00 | 259.50 | 181.84 | 365.55     | 408.15 | 400.91 | 6.49  | 330.75 | 406.58 | 406.05 | 20.66 |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-206            | Material Thermocouple #4        | Deg.F  | 38.10 | 38.63  | 38.31 | 0.11  | 40.05      | 404.70  | 274.36 | 85.44  | 405.38     | 421.95 | 412.90 | 3.48  | 206.93 | 404.25 | 401.40 | 53.87 |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-207            | Material Thermocouple #5        | Deg.F  | 38.70 | 39.30  | 39.02 | 0.14  | 42.08      | 1200.00 | 333.55 | 219.14 | 404.85     | 745.80 | 418.39 | 17.49 | 167.93 | 401.70 | 397.01 | 59.22 |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| <b>AFTERBURNER</b> |                                 |        |       |        |       |       |            |         |        |        |            |        |        |       |        |        |        |       |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-131            | Combustor Burner Temp. Control  | Deg. F | 355   | 1771   | 1537  | 296   | 1776       | 1837    | 1810   | 8      | 1784       | 1835   | 1810   | 11    | 1016   | 1824   | 1810   | 225   |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| PIT-149            | Fumes Flow                      | PPH    | 51    | 944    | 395   | 201   | 2          | 1506    | 473    | 199    | -13        | 1150   | 452    | 161   | 6      | 665    | 529    | 111   |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| PIT-151            | Fumes Pressure                  | InWC   | 0.40  | 0.51   | 0.47  | 0.02  | 0.31       | 0.74    | 0.45   | 0.05   | 0.21       | 0.65   | 0.33   | 0.08  | 0.42   | 2.39   | 0.51   | 0.24  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-145            | Combustor Temperature           | Deg. F | 401   | 1782   | 1560  | 280   | 1787       | 1846    | 1817   | 8      | 1789       | 1846   | 1818   | 13    | 982    | 1832   | 1817   | 238   |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| PIT-133            | Fuel Pressure                   | PSIG   | 0.83  | 0.84   | 0.84  | 0.00  | 0.17       | 0.84    | 0.44   | 0.14   | 0.06       | 0.23   | 0.13   | 0.04  | 0.00   | 0.81   | 0.08   | 0.30  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-121            | Fuel Gas Flow                   | CFH    | 1101  | 1106   | 1103  | 1     | 625        | 1104    | 781    | 104    | 394        | 685    | 563    | 80    | 1      | 1048   | 448    | 382   |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| <b>CEM</b>         |                                 |        |       |        |       |       |            |         |        |        |            |        |        |       |        |        |        |       |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| NOx-B              | Interconnecting Duct NOx        | ppm    | 0.93  | 1.03   | 0.98  | 0.03  | 1.03       | 42.53   | 1.98   | 1.69   | 0.95       | 7.50   | 1.44   | 0.54  | 0.05   | 0.78   | 0.73   | 0.14  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| THC-B              | Interconnecting Duct THC        | ppm    | -1.21 | 100.00 | 4.26  | 21.96 | 37.74      | 100.00  | 59.94  | 15.26  | 37.15      | 70.60  | 53.47  | 7.57  | 0.39   | 89.99  | 82.06  | 24.26 |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| CO                 | Stack's CO                      | ppm    | -0.50 | 96.50  | 2.54  | 14.02 | -0.50      | 0.00    | -0.50  | 0.01   | -1.00      | 0.00   | -0.46  | 0.18  | -0.50  | 31.00  | -0.50  | 4.90  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| THC                | Stack's THC                     | ppm    | 2.64  | 6.23   | 3.09  | 0.54  | 1.05       | 2.77    | 1.99   | 0.41   | -0.23      | 1.32   | 0.43   | 0.29  | 0.70   | 26.94  | 0.73   | 4.68  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| NOx                | Stack's NOx                     | ppm    | 0.00  | 52.38  | 26.08 | 24.75 | 0.00       | 98.80   | 49.18  | 16.02  | 43.73      | 86.23  | 63.11  | 9.41  | 0.83   | 72.73  | 59.59  | 22.20 |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| SO2                | Stack SO2                       | ppm    | 3.50  | 4.50   | 3.98  | 0.12  | 2.50       | 5.00    | 4.19   | 0.58   | 0.00       | 3.00   | 1.75   | 0.80  | 2.50   | 3.50   | 2.75   | 0.21  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| O2                 | Stack's O2                      | %      | 11.68 | 14.03  | 12.20 | 0.29  | 10.68      | 12.90   | 11.79  | 0.27   | 10.50      | 13.80  | 11.96  | 0.73  | 11.20  | 21.13  | 11.98  | 2.94  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| CO2                | Stack's CO2                     | %      | 4.54  | 5.84   | 5.50  | 0.17  | 4.98       | 7.06    | 5.74   | 0.18   | 4.64       | 6.76   | 5.86   | 0.46  | 0.12   | 6.28   | 5.74   | 1.86  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |
| TIT-300            | Ambient Temp                    | Deg. F | 37.76 | 38.30  | 37.91 | 0.12  | 32.00      | 38.66   | 35.15  | 1.74   | 32.00      | 33.26  | 32.03  | 0.12  | 32.00  | 32.00  | 32.00  | 0.00  |            |     |     |     |       |     |     |     |            |     |     |     |       |     |     |     |





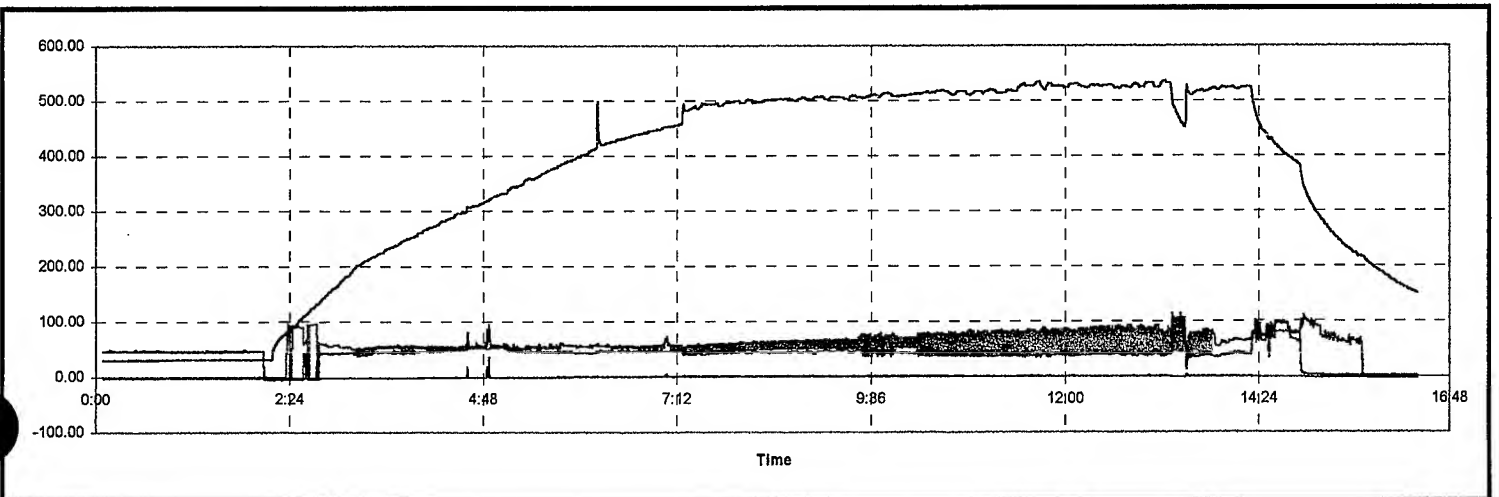


# SUMMARY OF DATA

Date: 6-Feb-96  
Time: 2:17

Test Number: 4  
Soak Time: 6 Hrs  
Soak Temp: Greater than 500 F

| Tag         | Parameter Description           | Unit   | 21:01 WARM 2:11 |        |       |       | 2:11 RAMP 8:03 |        |        |        | 8:03 SOAK 14:19 |        |        |       | 14:19 COOL 16:22 |        |        |        |
|-------------|---------------------------------|--------|-----------------|--------|-------|-------|----------------|--------|--------|--------|-----------------|--------|--------|-------|------------------|--------|--------|--------|
|             |                                 |        | Min.            | Max.   | Ave.  | Std.  | Min.           | Max.   | Ave.   | Std.   | Min.            | Max.   | Ave.   | Std.  | Min.             | Max.   | Ave.   | Std.   |
| FURNACE     |                                 |        |                 |        |       |       |                |        |        |        |                 |        |        |       |                  |        |        |        |
| PIT-232     | Fuel Gas Pressure               | In.WC  | 3.57            | 3.84   | 3.70  | 0.02  | 6.81           | 12.22  | 10.71  | 0.89   | 7.97            | 12.03  | 10.66  | 0.56  | 3.32             | 8.15   | 4.77   | 2.10   |
| FIT-231     | Fuel Gas Flow                   | CFH    | -0.63           | 109.70 | -0.16 | 3.12  | 35.58          | 181.10 | 89.15  | 24.03  | 38.45           | 282.60 | 99.23  | 13.98 | -1.18            | 39.15  | 10.27  | 17.91  |
| PIT-222     | Combustion Air Pressure         | In.WC  | 24.68           | 25.25  | 24.95 | 0.08  | 25.43          | 26.07  | 25.88  | 0.10   | 24.13           | 25.80  | 25.02  | 0.43  | 23.27            | 24.20  | 23.59  | 0.36   |
| FIT-221     | Combustion Air Flow             | CFH    | 11902           | 12091  | 11966 | 24    | 9850           | 11103  | 10207  | 238    | 9561            | 10491  | 9940   | 104   | 10398            | 11636  | 11252  | 517    |
| PIT-158     | Chamber Pressure (Draft)        | In.WC  | -0.45           | -0.28  | -0.29 | 0.02  | -0.47          | -0.20  | -0.25  | 0.04   | -0.35           | -0.15  | -0.25  | 0.04  | -0.37            | -0.08  | -0.21  | 0.07   |
| TIT-201     | Recorder Temperature            | Deg.F  | 29.70           | 33.75  | 31.24 | 0.90  | 37.20          | 558.15 | 369.87 | 132.35 | 427.95          | 557.48 | 543.86 | 16.08 | 120.68           | 505.35 | 255.28 | 110.74 |
| TIT-202     | Furnace Exit Gas Temp (Control) | Deg.F  | 29.70           | 33.68  | 31.27 | 0.86  | 37.20          | 565.13 | 373.52 | 133.64 | 428.48          | 561.30 | 547.58 | 16.69 | 120.30           | 506.85 | 254.66 | 111.37 |
| TIT-203     | Material Thermocouple #1        | Deg.F  | 31.73           | 36.68  | 33.13 | 0.99  | 37.95          | 558.53 | 369.10 | 134.23 | 449.63          | 558.90 | 543.54 | 13.36 | 108.23           | 506.03 | 260.32 | 120.80 |
| TIT-204     | Material Thermocouple #2        | Deg.F  | 32.78           | 38.25  | 34.28 | 1.50  | 33.60          | 375.23 | 220.68 | 98.70  | 375.38          | 486.00 | 449.66 | 31.95 | 245.03           | 483.00 | 370.32 | 75.40  |
| TIT-205     | Material Thermocouple #3        | Deg.F  | 30.75           | 36.68  | 32.32 | 1.18  | 32.63          | 496.65 | 320.34 | 127.19 | 458.78          | 516.53 | 505.63 | 8.20  | 143.55           | 500.78 | 284.56 | 106.44 |
| TIT-206     | Material Thermocouple #4        | Deg.F  | 28.95           | 34.43  | 30.57 | 0.97  | 36.68          | 829.28 | 321.76 | 125.49 | 422.40          | 539.55 | 505.25 | 17.63 | 123.53           | 487.80 | 235.91 | 95.57  |
| TIT-207     | Material Thermocouple #5        | Deg.F  | 31.50           | 35.25  | 32.86 | 0.89  | 38.10          | 624.98 | 399.22 | 140.12 | 456.38          | 659.93 | 576.99 | 17.90 | 131.25           | 518.63 | 272.54 | 115.09 |
| APPROXIMATE |                                 |        |                 |        |       |       |                |        |        |        |                 |        |        |       |                  |        |        |        |
| PIT-181     | Combustor Burner Temp. Control  | Deg. F | 41              | 1811   | 1769  | 141   | 1792           | 1828   | 1809   | 6      | 1767            | 1850   | 1807   | 16    | 292              | 1850   | 1403   | 602    |
| PIT-149     | Furnes Flow                     | PPH    | 2075            | 2626   | 2161  | 85    | 2115           | 2428   | 2247   | 63     | 1977            | 2288   | 2175   | 61    | 1715             | 2599   | 2272   | 203    |
| PIT-181     | Furnes Pressure                 | In.WC  | 0.44            | 0.71   | 0.47  | 0.04  | 0.26           | 0.67   | 0.47   | 0.06   | 0.16            | 0.51   | 0.31   | 0.05  | 0.07             | 0.69   | 0.43   | 0.16   |
| TIT-146     | Combustor Temperature           | Deg. F | 42              | 1818   | 1773  | 138   | 1797           | 1836   | 1814   | 7      | 1772            | 1850   | 1814   | 17    | 269              | 1850   | 1396   | 618    |
| PIT-183     | Fuel Pressure                   | PSIG   | 0.06            | 0.86   | 0.75  | 0.05  | 0.09           | 0.85   | 0.34   | 0.20   | 0.04            | 0.24   | 0.12   | 0.06  | 0.01             | 0.59   | 0.16   | 0.17   |
| PIT-131     | Fuel Gas Flow                   | CFH    | 367             | 1101   | 998   | 48    | 485            | 1093   | 716    | 135    | 347             | 684    | 525    | 110   | 1                | 879    | 426    | 318    |
| CEM         |                                 |        |                 |        |       |       |                |        |        |        |                 |        |        |       |                  |        |        |        |
| NOx-B       | Interconnecting Duct NOx        | ppm    | -1.30           | 1.38   | -0.97 | 0.33  | -1.33          | 36.93  | 0.32   | 1.72   | -0.18           | 4.08   | 1.63   | 0.37  | -0.73            | 0.15   | -0.54  | 0.20   |
| THC-B       | Interconnecting Duct THC        | ppm    | -14.65          | 0.02   | -1.02 | 3.74  | -0.51          | 98.13  | 49.47  | 14.10  | 14.33           | 79.87  | 43.38  | 6.65  | 1.75             | 94.94  | 24.85  | 34.81  |
| CO          | Stack's CO                      | ppm    | -0.50           | 446.50 | 5.93  | 48.90 | -0.50          | 449.50 | 28.36  | 106.07 | -0.50           | 1.50   | -0.30  | 0.28  | -0.50            | 35.00  | 0.30   | 2.62   |
| THC         | Stack's THC                     | ppm    | -8.15           | 50.59  | -2.95 | 3.26  | -100.0         | 100.00 | -4.86  | 24.82  | 0.00            | 0.00   | 0.00   | 0.00  | 0.00             | 0.00   | 0.00   | 0.00   |
| NOx         | Stack's NOx                     | ppm    | -4.10           | 52.78  | 34.43 | 21.37 | -5.03          | 95.38  | 47.37  | 16.91  | 33.58           | 114.20 | 62.13  | 15.15 | -2.03            | 110.48 | 51.44  | 39.67  |
| SO2         | Stack SO2                       | ppm    | -3.50           | -1.50  | -2.51 | 0.29  | -20.50         | 0.00   | -1.33  | 1.04   | -0.50           | 1.00   | 0.08   | 0.29  | -1.00            | 0.00   | -0.59  | 0.26   |
| O2          | Stack's O2                      | %      | 11.88           | 20.80  | 17.80 | 2.71  | 11.85          | 16.10  | 13.49  | 1.38   | 11.73           | 11.88  | 11.79  | 0.03  | 11.80            | 14.83  | 12.57  | 0.84   |
| CO2         | Stack's CO2                     | %      | 0.06            | 17.90  | 4.45  | 2.77  | 0.08           | 20.30  | 6.74   | 3.00   | 3.90            | 8.54   | 5.95   | 0.76  | 0.04             | 6.58   | 3.50   | 2.44   |
| TIT-300     | Ambient Temp                    | Deg. F | 32.00           | 34.88  | 32.02 | 0.22  | 32.00          | 34.34  | 32.12  | 0.39   | 33.98           | 54.68  | 44.29  | 5.97  | 49.28            | 52.88  | 51.40  | 0.81   |

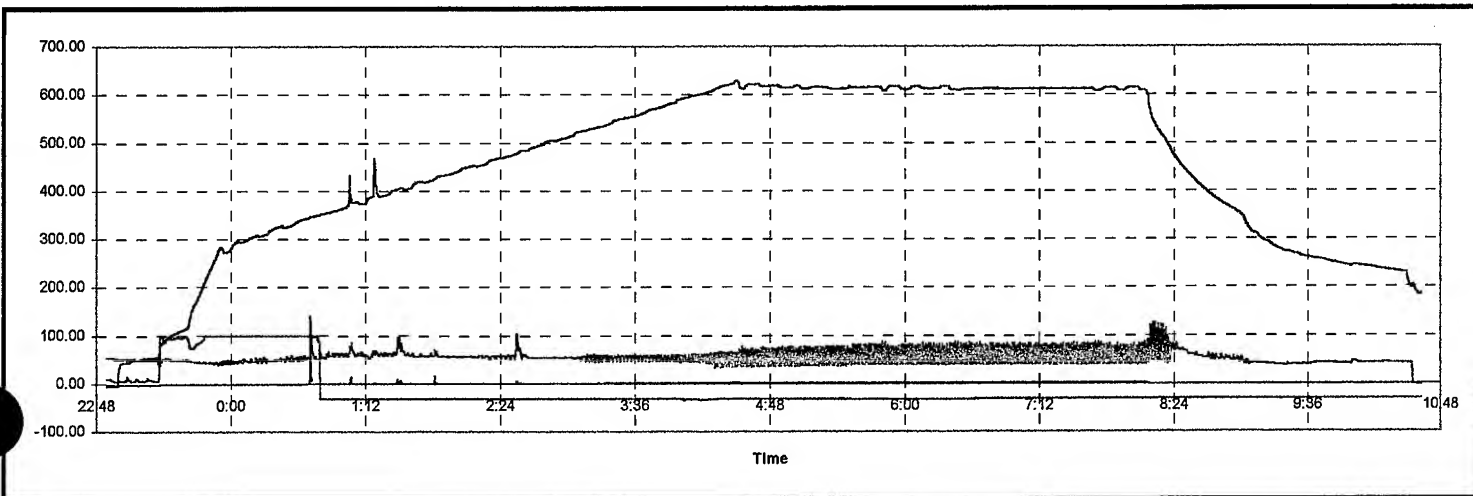


# SUMMARY OF DATA

Date: 7-Feb-96  
Time: 22:45

Test Number: 5  
Soak Time: 4 Hrs.  
Soak Temp: Greater than 600 F

|             |                                 |        | 22:53 WARM 23:21 |        |       |       | 23:21 RAMP 4:08 |        |        |        | 4:08 SOAK 8:10 |        |        |       | 8:10 COOL 10:37 |        |        |        |
|-------------|---------------------------------|--------|------------------|--------|-------|-------|-----------------|--------|--------|--------|----------------|--------|--------|-------|-----------------|--------|--------|--------|
| Tag         | Parameter Description           | Unit   | Min.             | Max.   | Ave.  | Std.  | Min.            | Max.   | Ave.   | Std.   | Min.           | Max.   | Ave.   | Std.  | Min.            | Max.   | Ave.   | Std.   |
| FURNACE     |                                 |        |                  |        |       |       |                 |        |        |        |                |        |        |       |                 |        |        |        |
| PIT-232     | Fuel Gas Pressure               | In.WC  | 0.52             | 10.56  | 3.53  | 0.83  | 7.06            | 12.23  | 11.42  | 0.86   | 8.62           | 12.32  | 11.69  | 0.30  | 3.45            | 8.73   | 8.06   | 1.11   |
| FIT-231     | Fuel Gas Flow                   | CFH    | -0.65            | 136.30 | 1.33  | 14.63 | 27.13           | 141.10 | 103.64 | 23.94  | 40.15          | 147.00 | 116.75 | 10.35 | -1.68           | 42.23  | 35.23  | 9.72   |
| PIT-222     | Combustion Air Pressure         | In.WC  | 0.11             | 25.34  | 23.69 | 3.91  | 24.59           | 25.54  | 25.29  | 0.16   | 24.39          | 25.56  | 25.27  | 0.19  | 22.62           | 24.40  | 23.87  | 0.38   |
| FIT-221     | Combustion Air Flow             | CFH    | 122              | 11920  | 11512 | 1897  | 10159           | 11228  | 10351  | 203    | 10148          | 10922  | 10259  | 48    | 10814           | 12006  | 10938  | 250    |
| PIT-158     | Chamber Pressure (Draft)        | In.WC  | -0.44            | 0.02   | -0.32 | 0.10  | -0.50           | -0.21  | -0.26  | 0.03   | -0.53          | -0.20  | -0.36  | 0.11  | -0.57           | -0.01  | -0.41  | 0.09   |
| TIT-201     | Recorder Temperature            | Deg.F  | 47.25            | 56.78  | 49.61 | 2.72  | 54.38           | 618.45 | 426.16 | 128.44 | 599.33         | 647.25 | 622.67 | 6.17  | 161.78          | 599.33 | 307.29 | 92.64  |
| TIT-202     | Furnace Exit Gas Temp (Control) | Deg.F  | 47.03            | 57.00  | 49.53 | 2.82  | 53.93           | 622.80 | 429.57 | 129.25 | 602.03         | 652.05 | 626.22 | 6.45  | 160.58          | 602.03 | 307.40 | 92.79  |
| TIT-203     | Material Thermocouple #1        | Deg.F  | 50.18            | 61.73  | 51.62 | 1.33  | 61.73           | 802.73 | 450.27 | 133.19 | 615.45         | 677.93 | 649.59 | 7.76  | 160.80          | 615.45 | 295.39 | 110.84 |
| TIT-204     | Material Thermocouple #2        | Deg.F  | 49.73            | 56.10  | 51.61 | 1.77  | 53.33           | 524.55 | 354.86 | 109.02 | 524.55         | 566.78 | 555.89 | 8.47  | 165.98          | 551.85 | 307.10 | 84.49  |
| TIT-205     | Material Thermocouple #3        | Deg.F  | 48.98            | 57.00  | 51.06 | 2.12  | 53.55           | 566.93 | 378.84 | 124.24 | 566.93         | 593.93 | 586.69 | 3.96  | 187.20          | 576.53 | 324.37 | 94.78  |
| TIT-206     | Material Thermocouple #4        | Deg.F  | 48.08            | 52.20  | 49.65 | 1.12  | 51.00           | 595.13 | 397.11 | 133.16 | 595.13         | 626.70 | 615.53 | 4.47  | 208.88          | 604.88 | 338.56 | 94.28  |
| TIT-207     | Material Thermocouple #5        | Deg.F  | 51.00            | 62.78  | 52.62 | 1.61  | 62.78           | 725.70 | 467.02 | 135.84 | 621.75         | 699.30 | 662.13 | 10.23 | 179.78          | 621.75 | 328.44 | 96.64  |
| AFTERBURNER |                                 |        |                  |        |       |       |                 |        |        |        |                |        |        |       |                 |        |        |        |
| WT-131      | Combustor Burner Temp. Control  | Deg. F | 63               | 1788   | 1224  | 689   | 1750            | 1828   | 1809   | 8      | 1783           | 1842   | 1814   | 17    | 928             | 1839   | 1782   | 116    |
| FIT-149     | Fumes Flow                      | PPH    | 526              | 2542   | 2177  | 472   | 2191            | 2542   | 2288   | 45     | 2028           | 2329   | 2137   | 73    | 1106            | 3375   | 2878   | 373    |
| PIT-151     | Fumes Pressure                  | InWC   | 0.04             | 0.69   | 0.48  | 0.14  | 0.39            | 0.67   | 0.44   | 0.03   | 0.18           | 0.43   | 0.32   | 0.05  | -0.06           | 1.45   | 0.96   | 0.33   |
| TIT-145     | Combustor Temperature           | Deg. F | 63               | 1798   | 1240  | 694   | 1757            | 1838   | 1815   | 9      | 1786           | 1850   | 1821   | 19    | 889             | 1850   | 1784   | 123    |
| PIT-133     | Fuel Pressure                   | PSIG   | 0.01             | 0.85   | 0.66  | 0.34  | 0.07            | 0.85   | 0.26   | 0.20   | 0.04           | 0.24   | 0.10   | 0.06  | 0.00            | 0.88   | 0.60   | 0.28   |
| FIT-131     | Fuel Gas Flow                   | CFH    | 1                | 1105   | 874   | 441   | 455             | 1102   | 668    | 138    | 332            | 676    | 485    | 129   | 1               | 1099   | 899    | 272    |
| CEM         |                                 |        |                  |        |       |       |                 |        |        |        |                |        |        |       |                 |        |        |        |
| NOx-B       | Interconnecting Duct NOx        | ppm    | -1.23            | -1.03  | -1.14 | 0.06  | -1.03           | 87.45  | 1.15   | 3.16   | 1.18           | 3.13   | 2.28   | 0.27  | -0.68           | 1.18   | -0.40  | 0.21   |
| THC-B       | Interconnecting Duct THC        | ppm    | 4.89             | 22.59  | 7.47  | 2.62  | -34.25          | 100.00 | 7.38   | 58.69  | -34.20         | -30.26 | -31.19 | 0.75  | -31.58          | -30.26 | -30.46 | 0.18   |
| CO          | Stack's CO                      | ppm    | -0.50            | 105.00 | 2.08  | 12.64 | -0.50           | 0.00   | -0.12  | 0.22   | -0.50          | 0.50   | -0.08  | 0.19  | -0.50           | 116.50 | 0.65   | 7.19   |
| THC         | Stack's THC                     | ppm    | 0.00             | 0.00   | 0.00  | 0.00  | 0.0             | 0.00   | 0.00   | 0.00   | 0.00           | 0.00   | 0.00   | 0.00  | 0.00            | 0.00   | 0.00   | 0.00   |
| NOx         | Stack's NOx                     | ppm    | -4.13            | 55.18  | 37.33 | 22.63 | 41.05           | 138.30 | 55.08  | 7.55   | 34.23          | 89.63  | 58.21  | 15.86 | -1.85           | 125.78 | 48.14  | 17.61  |
| SO2         | Stack SO2                       | ppm    | 2.00             | 4.00   | 2.62  | 0.41  | 2.50            | 6.00   | 4.75   | 0.59   | 3.00           | 4.50   | 3.85   | 0.45  | 2.50            | 3.50   | 2.70   | 0.26   |
| O2          | Stack's O2                      | %      | 11.70            | 21.13  | 14.08 | 3.74  | 10.25           | 12.70  | 11.36  | 0.34   | 9.25           | 13.38  | 11.38  | 1.37  | 10.83           | 20.80  | 13.04  | 1.52   |
| CO2         | Stack's CO2                     | %      | 0.02             | 6.02   | 4.55  | 2.42  | 5.32            | 6.66   | 6.07   | 0.22   | 4.62           | 7.42   | 5.97   | 0.91  | -0.02           | 6.42   | 4.94   | 0.98   |
| TIT-300     | Ambient Temp                    | Deg. F | 36.68            | 38.30  | 37.72 | 0.36  | 33.26           | 37.94  | 35.12  | 0.95   | 32.90          | 42.44  | 35.62  | 2.49  | 41.72           | 57.02  | 49.37  | 4.71   |

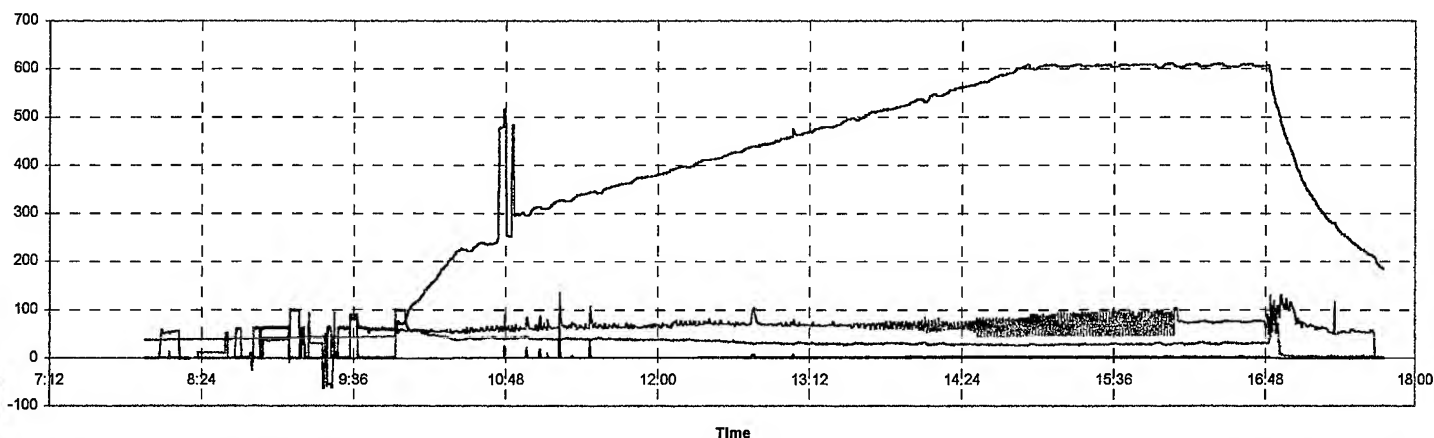


# SUMMARY OF DATA

Date: 12-Feb-96  
Time: 8:03

Test Number: 6  
Soak Time: 2 Hrs.  
Soak Temp: Greater than 600 F

| Tag         | Parameter Description           | Unit   | 8:03 WARM |        |       |        | 9:55 RAMP |         |        |        | 14:49 SOAK |        |        |       | 16:49 COOL |        |        |        | 17:44 |
|-------------|---------------------------------|--------|-----------|--------|-------|--------|-----------|---------|--------|--------|------------|--------|--------|-------|------------|--------|--------|--------|-------|
|             |                                 |        | Min.      | Max.   | Ave.  | Std.   | Min.      | Max.    | Ave.   | Std.   | Min.       | Max.   | Ave.   | Std.  | Min.       | Max.   | Ave.   | Std.   |       |
| FURNACE     |                                 |        |           |        |       |        |           |         |        |        |            |        |        |       |            |        |        |        |       |
| PIT-232     | Fuel Gas Pressure               | In.WC  | 3.66      | 10.66  | 3.82  | 0.34   | 3.77      | 11.63   | 11.07  | 0.62   | 10.05      | 11.63  | 11.36  | 0.11  | 3.23       | 10.07  | 4.07   | 1.43   |       |
| FIT-231     | Fuel Gas Flow                   | CFH    | -1.70     | 104.50 | -1.12 | 5.01   | -1.60     | 141.38  | 103.66 | 22.38  | 66.15      | 139.93 | 119.55 | 6.95  | -0.85      | 66.15  | 2.72   | 12.11  |       |
| PIT-222     | Combustion Air Pressure         | In.WC  | 23.35     | 24.69  | 23.70 | 0.22   | 23.47     | 24.87   | 24.63  | 0.11   | 24.57      | 24.82  | 24.72  | 0.04  | 23.27      | 24.57  | 23.44  | 0.27   |       |
| FIT-221     | Combustion Air Flow             | CFH    | 10403     | 12408  | 12220 | 110    | 10047     | 12116   | 10221  | 179    | 10088      | 10528  | 10172  | 34    | 10527      | 12280  | 12059  | 365    |       |
| PIT-158     | Chamber Pressure (Draft)        | In.WC  | -0.73     | -0.17  | -0.37 | 0.03   | -0.73     | -0.16   | -0.34  | 0.12   | -0.57      | -0.47  | -0.50  | 0.01  | -0.89      | -0.12  | -0.42  | 0.18   |       |
| TIT-201     | Recorder Temperature            | Deg.F  | 39.08     | 63.15  | 42.62 | 2.13   | 63.15     | 631.50  | 436.25 | 124.69 | 618.75     | 640.05 | 630.63 | 3.27  | 157.58     | 618.75 | 305.27 | 107.36 |       |
| TIT-202     | Furnace Exit Gas Temp (Control) | Deg.F  | 39.15     | 62.93  | 42.83 | 2.12   | 62.93     | 636.00  | 439.48 | 125.35 | 622.50     | 644.55 | 634.52 | 3.39  | 157.95     | 622.50 | 303.18 | 107.52 |       |
| TIT-203     | Material Thermocouple #1        | Deg.F  | 39.53     | 50.78  | 42.76 | 1.76   | 50.78     | 604.80  | 385.40 | 123.87 | 604.43     | 633.15 | 621.57 | 6.77  | 197.63     | 620.25 | 354.13 | 108.24 |       |
| TIT-204     | Material Thermocouple #2        | Deg.F  | 38.40     | 56.48  | 42.18 | 2.06   | 56.48     | 610.35  | 404.89 | 128.98 | 604.13     | 621.38 | 614.71 | 3.70  | 177.60     | 604.13 | 301.45 | 100.06 |       |
| TIT-205     | Material Thermocouple #3        | Deg.F  | 36.68     | 43.88  | 40.26 | 1.91   | 43.58     | 1200.00 | 374.53 | 195.85 | 581.25     | 605.63 | 601.23 | 4.87  | 244.58     | 604.50 | 403.75 | 110.01 |       |
| TIT-206     | Material Thermocouple #4        | Deg.F  | 39.45     | 69.98  | 43.49 | 2.42   | 69.98     | 537.75  | 362.88 | 105.69 | 526.88     | 550.88 | 542.63 | 3.71  | 127.05     | 526.88 | 231.03 | 102.06 |       |
| TIT-207     | Material Thermocouple #5        | Deg.F  | 39.38     | 69.60  | 43.31 | 2.38   | 69.60     | 669.00  | 470.57 | 126.88 | 637.65     | 672.83 | 659.49 | 4.76  | 175.58     | 637.65 | 327.60 | 114.72 |       |
| AFTERBURNER |                                 |        |           |        |       |        |           |         |        |        |            |        |        |       |            |        |        |        |       |
| TIT-131     | Combustor Burner Temp. Control  | Deg. F | 44        | 1827   | 1731  | 216    | 1780      | 1831    | 1809   | 8      | 1782       | 1850   | 1816   | 16    | 896        | 1843   | 1738   | 178    |       |
| FIT-149     | Fumes Flow                      | PPH    | 2102      | 2560   | 2342  | 55     | 2116      | 2594    | 2333   | 47     | 2107       | 2322   | 2191   | 27    | 2099       | 4000   | 3071   | 430    |       |
| PIT-151     | Fumes Pressure                  | InWC   | 0.34      | 0.70   | 0.52  | 0.04   | 0.29      | 0.75    | 0.43   | 0.06   | 0.27       | 0.36   | 0.32   | 0.01  | 0.34       | 2.01   | 1.16   | 0.41   |       |
| TIT-145     | Combustor Temperature           | Deg. F | 46        | 1832   | 1739  | 210    | 1783      | 1841    | 1815   | 9      | 1786       | 1850   | 1823   | 18    | 854        | 1850   | 1738   | 189    |       |
| PIT-138     | Fuel Pressure                   | PSIG   | 0.08      | 0.84   | 0.82  | 0.05   | 0.04      | 0.82    | 0.28   | 0.18   | 0.04       | 0.22   | 0.10   | 0.05  | 0.01       | 0.85   | 0.57   | 0.32   |       |
| FIT-121     | Fuel Gas Flow                   | CFH    | 477       | 1109   | 1081  | 41     | 342       | 1092    | 680    | 127    | 330        | 681    | 498    | 113   | 1          | 1100   | 840    | 332    |       |
| CEM         |                                 |        |           |        |       |        |           |         |        |        |            |        |        |       |            |        |        |        |       |
| NOx-B       | Interconnecting Duct NOx        | ppm    | -0.78     | 86.90  | 2.52  | 14.69  | -0.23     | 63.93   | 2.01   | 3.20   | 2.30       | 4.10   | 3.08   | 0.34  | -0.30      | 2.30   | -0.14  | 0.80   |       |
| THC-B       | Interconnecting Duct THC        | ppm    | -62.95    | 100.00 | 12.44 | 27.07  | 26.52     | 100.00  | 36.75  | 10.37  | 26.25      | 36.22  | 29.66  | 1.45  | 2.14       | 71.66  | 8.70   | 17.43  |       |
| CO          | Stack's CO                      | ppm    | -0.50     | 497.00 | 54.01 | 103.44 | 0.00      | 0.50    | 0.00   | 0.04   | 0.00       | 0.50   | 0.00   | 0.02  | 0.00       | 3.00   | 0.04   | 0.26   |       |
| THC         | Stack's THC                     | ppm    | -0.63     | 0.52   | -0.13 | 0.52   | -0.6      | -0.62   | -0.62  | 0.00   | -0.62      | -0.62  | -0.62  | 0.00  | -0.63      | 0.54   | -0.56  | 0.23   |       |
| NOx         | Stack's NOx                     | ppm    | 0.13      | 90.08  | 33.06 | 30.90  | 43.30     | 134.55  | 65.80  | 8.09   | 44.35      | 103.18 | 71.89  | 15.09 | 1.40       | 129.53 | 64.01  | 27.98  |       |
| SO2         | Stack SO2                       | ppm    | -1.50     | 129.00 | 3.73  | 21.63  | -0.50     | 1.00    | 0.03   | 0.28   | -0.50      | 0.50   | -0.02  | 0.23  | -1.00      | 0.00   | -0.29  | 0.25   |       |
| O2          | Stack's O2                      | %      | -0.08     | 17.60  | 9.09  | 4.83   | 10.63     | 14.38   | 12.49  | 0.49   | 10.20      | 14.63  | 12.36  | 1.21  | 11.20      | 22.30  | 15.17  | 2.14   |       |
| CO2         | Stack's CO2                     | %      | -0.20     | 22.82  | 3.42  | 4.46   | 0.62      | 0.98    | 0.76   | 0.05   | 0.60       | 1.04   | 0.83   | 0.10  | -0.06      | 0.92   | 0.60   | 0.20   |       |
| TIT-300     | Ambient Temp                    | Deg. F | 37.04     | 42.44  | 39.54 | 1.35   | 41.72     | 52.70   | 47.77  | 2.85   | 46.22      | 50.54  | 48.10  | 0.88  | 43.16      | 46.94  | 45.31  | 0.80   |       |

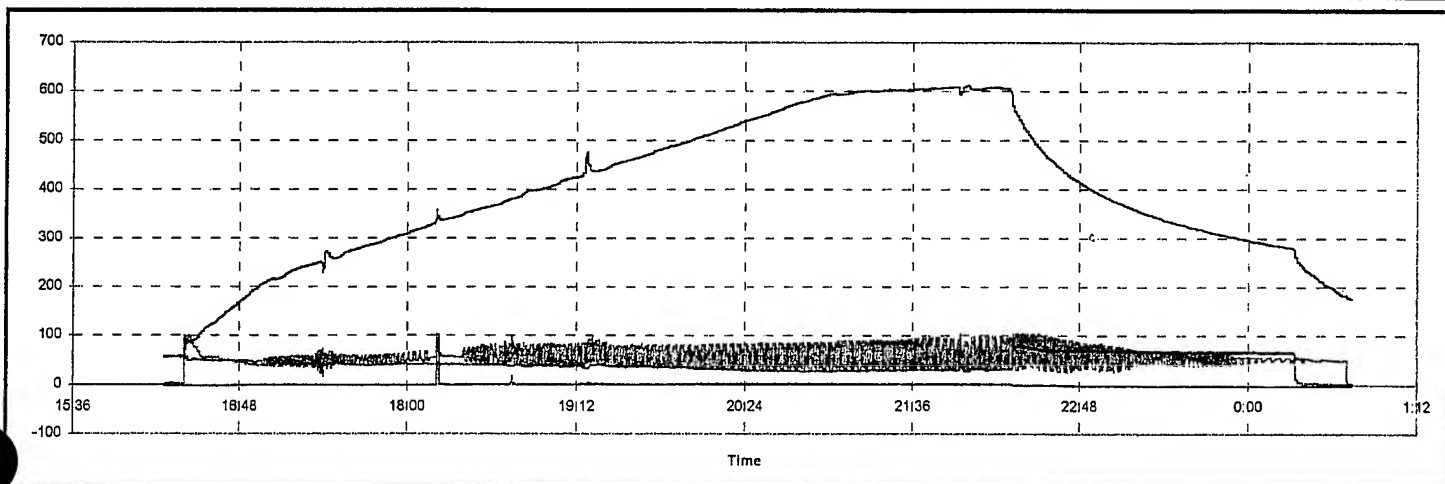


## SUMMARY OF DATA

Date: 14-Feb-96  
Time: 0:45

Test Number: 7  
Soak Time: 1 Hrs.  
Soak Temp: Greater than 600 F

|             |                                 |        | 16:16 WARM |        |        |       | 16:24 RAMP |        |        |        | 21:13 SOAK |        |        |       | 22:18 COOL |        |        |       | 0:19 |
|-------------|---------------------------------|--------|------------|--------|--------|-------|------------|--------|--------|--------|------------|--------|--------|-------|------------|--------|--------|-------|------|
| Tag         | Parameter Description           | Unit   | Min.       | Max.   | Ave.   | Std.  | Min.       | Max.   | Ave.   | Std.   | Min.       | Max.   | Ave.   | Std.  | Min.       | Max.   | Ave.   | Std.  |      |
| FURNACE     |                                 |        |            |        |        |       |            |        |        |        |            |        |        |       |            |        |        |       |      |
| PIT-232     | Fuel Gas Pressure               | In.WC  | 3.61       | 10.62  | 3.85   | 1.22  | 3.73       | 11.69  | 10.84  | 0.89   | 9.45       | 11.76  | 11.47  | 0.19  | 4.42       | 9.45   | 8.74   | 0.20  |      |
| FIT-231     | Fuel Gas Flow                   | CFH    | -1.15      | 135.35 | 3.64   | 23.88 | -1.10      | 139.15 | 98.81  | 27.30  | 52.90      | 137.35 | 119.81 | 8.83  | -0.63      | 52.90  | 40.49  | 1.98  |      |
| PIT-222     | Combustion Air Pressure         | In.WC  | 22.81      | 24.13  | 22.89  | 0.22  | 22.87      | 24.84  | 24.47  | 0.25   | 24.45      | 24.96  | 24.81  | 0.06  | 23.47      | 24.47  | 24.33  | 0.06  |      |
| FIT-221     | Combustion Air Flow             | CFH    | 10275      | 12045  | 11964  | 304   | 10052      | 11984  | 10245  | 201    | 10091      | 10672  | 10163  | 52    | 10672      | 11927  | 10866  | 51    |      |
| PIT-158     | Chamber Pressure (Draft)        | In.WC  | -0.48      | -0.19  | -0.31  | 0.04  | -0.59      | -0.14  | -0.38  | 0.12   | -0.50      | -0.40  | -0.44  | 0.01  | -0.48      | -0.18  | -0.25  | 0.05  |      |
| TIT-201     | Recorder Temperature            | Deg.F  | 58.88      | 80.25  | 60.05  | 3.71  | 80.25      | 651.90 | 429.55 | 147.30 | 622.20     | 656.85 | 646.70 | 4.45  | 265.65     | 635.85 | 356.45 | 79.14 |      |
| TIT-202     | Furnace Exit Gas Temp (Control) | Deg.F  | 59.33      | 81.08  | 60.34  | 3.79  | 81.08      | 656.03 | 432.51 | 148.11 | 624.83     | 660.68 | 650.28 | 4.52  | 266.70     | 639.30 | 357.18 | 79.11 |      |
| TIT-203     | Material Thermocouple #1        | Deg.F  | 60.08      | 62.10  | 60.38  | 0.34  | 62.10      | 623.33 | 387.92 | 154.42 | 623.33     | 632.73 | 629.45 | 1.78  | 295.13     | 630.00 | 406.04 | 91.70 |      |
| TIT-204     | Material Thermocouple #2        | Deg.F  | 58.73      | 78.15  | 59.65  | 3.41  | 76.05      | 646.05 | 408.30 | 155.07 | 640.75     | 648.30 | 645.73 | 1.73  | 280.13     | 640.95 | 362.48 | 77.15 |      |
| TIT-205     | Material Thermocouple #3        | Deg.F  | 53.40      | 56.55  | 53.80  | 0.52  | 56.55      | 466.65 | 279.27 | 108.38 | 445.83     | 514.30 | 493.62 | 14.83 | 313.50     | 513.90 | 392.94 | 54.97 |      |
| TIT-206     | Material Thermocouple #4        | Deg.F  | 59.70      | 76.65  | 60.57  | 2.92  | 76.28      | 609.15 | 367.01 | 134.30 | 554.78     | 582.30 | 575.54 | 3.70  | 218.63     | 566.93 | 299.91 | 81.54 |      |
| TIT-207     | Material Thermocouple #5        | Deg.F  | 59.93      | 92.85  | 61.24  | 5.73  | 88.65      | 690.38 | 466.24 | 151.72 | 640.75     | 677.35 | 681.19 | 7.01  | 290.63     | 664.43 | 383.65 | 78.31 |      |
| AFTERBURNER |                                 |        |            |        |        |       |            |        |        |        |            |        |        |       |            |        |        |       |      |
| TIT-131     | Combustor Burner Temp. Control  | Deg. F | 1652       | 1774   | 1735   | 39    | 1704       | 1850   | 1801   | 28     | 1756       | 1850   | 1806   | 34    | 1756       | 1850   | 1806   | 23    |      |
| PIT-149     | Fumes Flow                      | PPH    | 2199       | 2401   | 2298   | 33    | 2056       | 2449   | 2205   | 92     | 2023       | 2131   | 2073   | 12    | 2053       | 2545   | 2437   | 103   |      |
| PIT-151     | Fumes Pressure                  | In.WC  | 0.38       | 0.55   | 0.48   | 0.03  | 0.26       | 0.61   | 0.38   | 0.08   | 0.24       | 0.31   | 0.28   | 0.01  | 0.27       | 0.69   | 0.58   | 0.09  |      |
| TIT-145     | Combustor Temperature           | Deg. F | 1549       | 1656   | 1621   | 34    | 1579       | 1741   | 1678   | 30     | 1630       | 1738   | 1683   | 37    | 1631       | 1738   | 1681   | 24    |      |
| PIT-133     | Fuel Pressure                   | PSIG   | 0.81       | 0.82   | 0.82   | 0.00  | 0.07       | 0.82   | 0.44   | 0.19   | 0.06       | 0.62   | 0.30   | 0.21  | 0.06       | 0.73   | 0.50   | 0.15  |      |
| TIT-121     | Fuel Gas Flow                   | CFH    | 1100       | 1102   | 1101   | 0     | 240        | 1102   | 693    | 229    | 236        | 876    | 522    | 247   | 239        | 972    | 751    | 184   |      |
| CEM         |                                 |        |            |        |        |       |            |        |        |        |            |        |        |       |            |        |        |       |      |
| NOx-B       | Interconnecting Duct NOx        | ppm    | -1.63      | -1.55  | -1.58  | 0.01  | -1.58      | 86.30  | 0.81   | 3.41   | 0.20       | 2.45   | 1.85   | 0.30  | -1.33      | 1.63   | -1.16  | 0.26  |      |
| THC-B       | Interconnecting Duct THC        | ppm    | -2.22      | 100.00 | 5.68   | 16.94 | -15.99     | 100.00 | 38.82  | 9.91   | 27.25      | 44.18  | 30.09  | 2.05  | 31.17      | 80.29  | 68.80  | 3.98  |      |
| CO          | Stack's CO                      | ppm    | 0.00       | 0.00   | 0.00   | 0.00  | -0.50      | 1.00   | 0.00   | 0.04   | 0.00       | 0.00   | 0.00   | 0.00  | 0.00       | 0.50   | 0.00   | 0.02  |      |
| THC         | Stack's THC                     | ppm    | 100.00     | 100.00 | 100.00 | 0.00  | -1.6       | 100.00 | 7.16   | 28.12  | -1.57      | -1.22  | -1.41  | 0.07  | -1.62      | -1.26  | -1.46  | 0.07  |      |
| NOx         | Stack's NOx                     | ppm    | 56.03      | 59.43  | 57.25  | 0.94  | 23.68      | 102.33 | 56.72  | 15.38  | 30.60      | 102.48 | 56.92  | 23.79 | 26.73      | 102.50 | 57.14  | 17.19 |      |
| SO2         | Stack SO2                       | ppm    | 2.00       | 2.50   | 2.08   | 0.18  | 0.50       | 2.50   | 1.36   | 0.36   | 1.00       | 2.00   | 1.55   | 0.17  | 1.00       | 2.00   | 1.52   | 0.15  |      |
| O2          | Stack's O2                      | %      | 11.40      | 11.63  | 11.49  | 0.06  | 7.58       | 14.33  | 11.14  | 1.52   | 7.63       | 14.18  | 11.20  | 2.19  | 7.85       | 15.48  | 12.30  | 1.23  |      |
| CO2         | Stack's CO2                     | %      | 6.42       | 6.56   | 6.50   | 0.04  | 4.06       | 9.84   | 6.79   | 1.29   | 4.28       | 9.80   | 6.80   | 1.87  | 3.30       | 9.64   | 5.84   | 1.00  |      |
| TIT-300     | Ambient Temp                    | Deg. F | 55.40      | 56.66  | 56.00  | 0.29  | 44.78      | 58.82  | 49.17  | 3.31   | 43.52      | 46.22  | 44.68  | 0.57  | 42.80      | 45.86  | 44.05  | 0.54  |      |

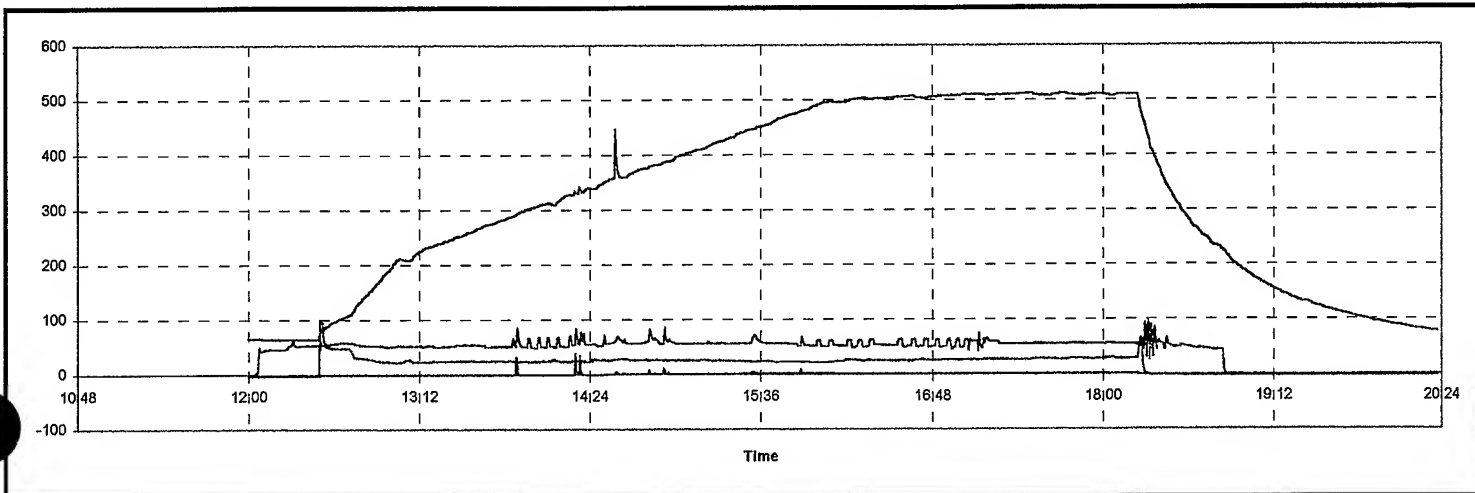


# SUMMARY OF DATA

Date: 15-Feb-96  
Time: 20:25

Test Number: 8  
Soak Time: 2 Hrs.  
Soak Temp: Greater than 500 F

|             |                                 |        | 12:03 |        |       |       | 12:29 |        |        |        | 16:13  |        |        |       | 18:15  |        |        |       | 18:15 |      |      |      | 18:18 |  |  |  |
|-------------|---------------------------------|--------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|-------|-------|------|------|------|-------|--|--|--|
|             |                                 |        | WARM  |        |       |       | RAMP  |        |        |        | SOAK   |        |        |       | COOL   |        |        |       |       |      |      |      |       |  |  |  |
| Tag         | Parameter Description           | Unit   | Min.  | Max.   | Ave.  | Std.  | Min.  | Max.   | Ave.   | Std.   | Min.   | Max.   | Ave.   | Std.  | Min.   | Max.   | Ave.   | Std.  | Min.  | Max. | Ave. | Std. |       |  |  |  |
| FURNACE     |                                 |        |       |        |       |       |       |        |        |        |        |        |        |       |        |        |        |       |       |      |      |      |       |  |  |  |
| PIT-232     | Fuel Gas Pressure               | In.WC  | 2.70  | 9.86   | 3.19  | 0.74  | 5.26  | 11.85  | 10.29  | 1.38   | 4.37   | 11.78  | 11.36  | 1.26  | 4.52   | 9.28   | 6.46   | 2.27  |       |      |      |      |       |  |  |  |
| FIT-231     | Fuel Gas Flow                   | CFH    | -1.60 | 135.95 | -0.20 | 13.29 | 1.38  | 135.95 | 81.06  | 25.67  | -0.73  | 115.95 | 93.17  | 18.78 | -0.73  | 37.95  | 14.13  | 19.52 |       |      |      |      |       |  |  |  |
| PIT-222     | Combustion Air Pressure         | In.WC  | 22.11 | 23.53  | 22.31 | 0.17  | 22.72 | 23.72  | 23.46  | 0.18   | 22.30  | 23.98  | 23.74  | 0.27  | 22.37  | 23.45  | 22.80  | 0.51  |       |      |      |      |       |  |  |  |
| FIT-221     | Combustion Air Flow             | CFH    | 10236 | 12083  | 11959 | 184   | 10166 | 11302  | 10565  | 253    | 10641  | 12881  | 10839  | 372   | 11517  | 12858  | 12291  | 625   |       |      |      |      |       |  |  |  |
| PIT-158     | Chamber Pressure (Draft)        | In.WC  | -1.00 | -0.27  | -0.67 | 0.30  | -1.00 | -0.58  | -0.75  | 0.12   | -0.61  | -0.17  | -0.56  | 0.07  | -0.39  | -0.17  | -0.22  | 0.08  |       |      |      |      |       |  |  |  |
| TIT-201     | Recorder Temperature            | Deg.F  | 63.23 | 66.60  | 63.88 | 0.61  | 66.60 | 552.45 | 373.83 | 122.60 | 360.53 | 551.93 | 542.03 | 25.33 | 406.43 | 521.40 | 465.09 | 38.53 |       |      |      |      |       |  |  |  |
| TIT-202     | Furnace Exit Gas Temp (Control) | Deg.F  | 63.53 | 66.45  | 64.21 | 0.61  | 66.30 | 556.28 | 376.67 | 123.33 | 357.53 | 555.60 | 545.24 | 26.31 | 404.03 | 523.88 | 465.22 | 40.03 |       |      |      |      |       |  |  |  |
| TIT-203     | Material Thermocouple #1        | Deg.F  | 63.75 | 67.73  | 64.78 | 0.69  | 67.73 | 523.50 | 347.39 | 118.31 | 408.15 | 525.83 | 516.68 | 11.74 | 473.10 | 505.43 | 489.25 | 8.95  |       |      |      |      |       |  |  |  |
| TIT-204     | Material Thermocouple #2        | Deg.F  | 65.33 | 66.30  | 65.68 | 0.22  | 65.93 | 414.68 | 270.51 | 90.80  | 371.63 | 461.63 | 439.50 | 15.46 | 394.35 | 451.28 | 424.67 | 19.78 |       |      |      |      |       |  |  |  |
| TIT-205     | Material Thermocouple #3        | Deg.F  | 65.93 | 67.20  | 66.45 | 0.36  | 65.93 | 507.45 | 313.12 | 125.94 | 499.28 | 530.70 | 525.15 | 6.18  | 515.93 | 529.58 | 523.76 | 4.37  |       |      |      |      |       |  |  |  |
| TIT-206     | Material Thermocouple #4        | Deg.F  | 64.05 | 66.00  | 64.55 | 0.41  | 65.10 | 483.15 | 312.14 | 113.17 | 407.70 | 489.30 | 484.60 | 10.47 | 432.98 | 474.30 | 451.77 | 12.95 |       |      |      |      |       |  |  |  |
| TIT-207     | Material Thermocouple #5        | Deg.F  | 65.70 | 70.05  | 66.31 | 0.50  | 70.05 | 873.00 | 402.12 | 126.27 | 390.08 | 581.93 | 567.92 | 25.56 | 436.20 | 533.10 | 481.28 | 30.39 |       |      |      |      |       |  |  |  |
| AFTERBURNER |                                 |        |       |        |       |       |       |        |        |        |        |        |        |       |        |        |        |       |       |      |      |      |       |  |  |  |
| PIT-131     | Combustor Burner Temp. Control  | Deg. F | 78    | 1743   | 1493  | 392   | 1741  | 1850   | 1809   | 18     | 1756   | 1850   | 1815   | 20    | 1779   | 1832   | 1804   | 15    |       |      |      |      |       |  |  |  |
| FIT-149     | Fumes Flow                      | PPH    | 2103  | 2588   | 2380  | 95    | 1968  | 2588   | 2104   | 103    | 1960   | 2732   | 2012   | 101   | 2149   | 2584   | 2340   | 114   |       |      |      |      |       |  |  |  |
| PIT-151     | Fumes Pressure                  | In.WC  | 0.37  | 0.73   | 0.55  | 0.06  | 0.20  | 0.73   | 0.31   | 0.09   | 0.20   | 0.81   | 0.25   | 0.08  | 0.36   | 0.69   | 0.49   | 0.09  |       |      |      |      |       |  |  |  |
| TIT-145     | Combustor Temperature           | Deg. F | 83    | 1759   | 1516  | 388   | 1756  | 1876   | 1822   | 20     | 1762   | 1888   | 1828   | 23    | 1788   | 1847   | 1815   | 17    |       |      |      |      |       |  |  |  |
| PIT-133     | Fuel Pressure                   | PSIG   | 0.02  | 0.81   | 0.79  | 0.11  | 0.30  | 0.81   | 0.45   | 0.13   | 0.15   | 0.80   | 0.35   | 0.06  | 0.15   | 0.61   | 0.40   | 0.13  |       |      |      |      |       |  |  |  |
| FIT-121     | Fuel Gas Flow                   | CFH    | 138   | 1108   | 1084  | 131   | 510   | 1103   | 728    | 150    | 329    | 1063   | 572    | 71    | 369    | 879    | 629    | 148   |       |      |      |      |       |  |  |  |
| CEM         |                                 |        |       |        |       |       |       |        |        |        |        |        |        |       |        |        |        |       |       |      |      |      |       |  |  |  |
| NOx-B       | Interconnecting Duct NOx        | ppm    | -0.68 | -0.58  | -0.62 | 0.03  | -0.63 | 38.05  | 0.92   | 2.57   | -0.60  | 1.60   | 0.89   | 0.34  | -0.45  | 0.18   | -0.27  | 0.17  |       |      |      |      |       |  |  |  |
| THC-B       | Interconnecting Duct THC        | ppm    | -2.50 | -1.34  | -2.32 | 0.21  | -2.46 | 100.00 | 26.99  | 8.60   | -0.70  | 61.55  | 26.97  | 5.57  | 1.72   | 61.55  | 34.99  | 25.74 |       |      |      |      |       |  |  |  |
| CO          | Stack's CO                      | ppm    | -0.50 | 131.50 | 4.19  | 21.25 | -1.00 | -0.50  | -0.50  | 0.02   | -0.50  | -0.50  | -0.50  | 0.00  | -0.50  | -0.50  | -0.50  | 0.00  |       |      |      |      |       |  |  |  |
| THC         | Stack's THC                     | ppm    | -4.51 | 54.10  | -3.07 | 6.68  | -5.1  | -3.60  | -4.72  | 0.16   | -5.12  | -4.75  | -4.92  | 0.07  | -5.10  | -4.85  | -4.99  | 0.07  |       |      |      |      |       |  |  |  |
| NOx         | Stack's NOx                     | ppm    | 2.10  | 63.30  | 48.33 | 10.29 | 47.28 | 86.60  | 56.45  | 5.23   | 26.63  | 98.25  | 56.34  | 5.80  | 45.15  | 94.00  | 63.33  | 14.42 |       |      |      |      |       |  |  |  |
| SO2         | Stack SO2                       | ppm    | 0.50  | 1.00   | 0.78  | 0.25  | 0.00  | 1.00   | 0.75   | 0.25   | 0.00   | 1.00   | 0.49   | 0.16  | 0.00   | 0.50   | 0.46   | 0.14  |       |      |      |      |       |  |  |  |
| O2          | Stack's O2                      | %      | 11.68 | 20.93  | 12.89 | 1.61  | 10.05 | 12.53  | 11.63  | 0.35   | 9.78   | 16.38  | 11.77  | 0.64  | 12.00  | 14.65  | 12.92  | 0.81  |       |      |      |      |       |  |  |  |
| CO2         | Stack's CO2                     | %      | 0.04  | 5.96   | 5.16  | 1.01  | 5.28  | 6.90   | 5.93   | 0.22   | 2.66   | 7.20   | 5.84   | 0.42  | 3.90   | 5.74   | 5.07   | 0.55  |       |      |      |      |       |  |  |  |
| TIT-300     | Ambient Temp                    | Deg. F | 57.38 | 59.72  | 58.73 | 0.48  | 53.24 | 61.88  | 57.52  | 2.31   | 45.14  | 54.68  | 49.44  | 2.06  | 45.14  | 46.94  | 46.14  | 0.51  |       |      |      |      |       |  |  |  |

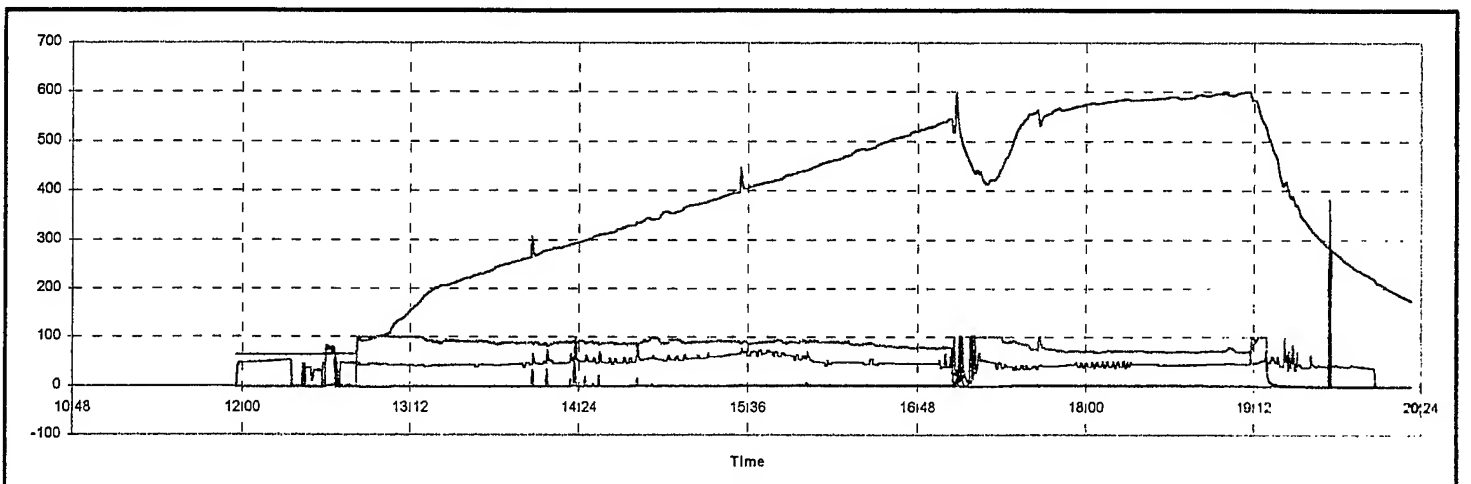


# SUMMARY OF DATA

Date: 19-Feb-96  
Time: 20:45

Test Number: 9  
Soak Time: 0 Hrs.  
Soak Temp: Greater than 600 F

|             |                                 |        | 11:57      WARM      12:49 |        |       |       | 12:49      RAMP      19:08 |        |        |        | 19:08      SOAK      19:10 |        |        |      | 19:10      COOL      20:45 |        |        |        |
|-------------|---------------------------------|--------|----------------------------|--------|-------|-------|----------------------------|--------|--------|--------|----------------------------|--------|--------|------|----------------------------|--------|--------|--------|
| Tag         | Parameter Description           | Unit   | Min.                       | Max.   | Ave.  | Std.  | Min.                       | Max.   | Ave.   | Std.   | Min.                       | Max.   | Ave.   | Std. | Min.                       | Max.   | Ave.   | Std.   |
| FURNACE     |                                 |        |                            |        |       |       |                            |        |        |        |                            |        |        |      |                            |        |        |        |
| PIT-232     | Fuel Gas Pressure               | In.WC  | 3.97                       | 11.37  | 4.10  | 0.67  | 3.96                       | 13.65  | 11.07  | 1.46   | 11.77                      | 11.84  | 11.80  | 0.02 | 3.49                       | 11.82  | 4.21   | 1.60   |
| FIT-231     | Fuel Gas Flow                   | CFH    | -1.60                      | 132.18 | -0.23 | 11.83 | -1.38                      | 381.33 | 100.48 | 38.12  | 123.75                     | 127.53 | 124.32 | 1.30 | -1.03                      | 123.75 | 3.69   | 18.98  |
| PIT-222     | Combustion Air Pressure         | In.WC  | 21.38                      | 23.11  | 21.50 | 0.16  | 21.48                      | 23.82  | 23.24  | 0.43   | 23.63                      | 23.73  | 23.67  | 0.03 | 21.54                      | 23.64  | 21.90  | 0.40   |
| FIT-221     | Combustion Air Flow             | CFH    | 10681                      | 12769  | 12703 | 193   | 10391                      | 12842  | 10731  | 404    | 10559                      | 10584  | 10573  | 9    | 1                          | 12941  | 12693  | 792    |
| PIT-158     | Chamber Pressure (Draft)        | In.WC  | -0.44                      | -0.19  | -0.37 | 0.02  | -0.89                      | -0.14  | -0.45  | 0.10   | -0.57                      | -0.56  | -0.57  | 0.00 | -1.00                      | 1100.2 | 2.20   | 54.25  |
| TIT-201     | Recorder Temperature            | Deg.F  | 65.55                      | 78.60  | 66.40 | 1.00  | 78.60                      | 661.28 | 467.83 | 154.72 | 652.43                     | 653.25 | 652.70 | 0.29 | -1.20                      | 653.25 | 244.77 | 137.15 |
| TIT-202     | Furnace Exit Gas Temp (Control) | Deg.F  | 65.93                      | 78.30  | 66.64 | 0.94  | 78.30                      | 668.40 | 471.18 | 155.86 | 654.70                     | 657.53 | 656.97 | 0.25 | -0.36                      | 657.53 | 243.36 | 137.27 |
| TIT-203     | Material Thermocouple #1        | Deg.F  | 67.35                      | 83.48  | 68.36 | 1.13  | 83.48                      | 645.30 | 413.67 | 141.57 | 589.50                     | 593.18 | 591.11 | 1.03 | -0.50                      | 593.63 | 221.66 | 137.07 |
| TIT-204     | Material Thermocouple #2        | Deg.F  | 57.60                      | 61.73  | 58.73 | 0.71  | 61.73                      | 531.53 | 332.45 | 128.77 | 531.53                     | 532.58 | 531.94 | 0.35 | -1.06                      | 532.80 | 311.80 | 100.12 |
| TIT-205     | Material Thermocouple #3        | Deg.F  | 62.03                      | 65.10  | 63.66 | 0.81  | 65.10                      | 624.23 | 403.19 | 169.36 | 624.23                     | 624.98 | 624.55 | 0.24 | 41.80                      | 625.28 | 348.82 | 143.76 |
| TIT-206     | Material Thermocouple #4        | Deg.F  | 66.15                      | 78.98  | 66.83 | 0.93  | 78.98                      | 591.60 | 408.01 | 134.61 | 574.73                     | 575.70 | 575.23 | 0.30 | 0.50                       | 575.33 | 219.42 | 120.97 |
| TIT-207     | Material Thermocouple #5        | Deg.F  | 65.78                      | 81.53  | 66.71 | 1.14  | 81.53                      | 774.60 | 497.77 | 156.96 | 679.35                     | 680.33 | 679.81 | 0.33 | 13.33                      | 679.35 | 267.88 | 141.38 |
| AFTERBURNER |                                 |        |                            |        |       |       |                            |        |        |        |                            |        |        |      |                            |        |        |        |
| TIT-131     | Combustor Burner Temp. Control  | Deg. F | 592                        | 1802   | 1715  | 182   | 1282                       | 1850   | 1792   | 48     | 1815                       | 1816   | 1815   | 0    | 5                          | 1850   | 1198   | 485    |
| FIT-147     | Fumes Flow                      | PPH    | 2372                       | 2569   | 2446  | 31    | 1760                       | 2511   | 2153   | 112    | 2021                       | 2057   | 2043   | 11   | 56                         | 4000   | 3423   | 635    |
| PIT-151     | Fumes Pressure                  | In.WC  | 0.51                       | 0.65   | 0.56  | 0.01  | -0.04                      | 0.60   | 0.31   | 0.08   | 0.23                       | 0.26   | 0.25   | 0.01 | 0.17                       | 296.49 | 2.25   | 15.08  |
| TIT-145     | Combustor Temperature           | Deg. F | 572                        | 1814   | 1729  | 180   | 1261                       | 1906   | 1804   | 52     | 1829                       | 1829   | 1829   | 0    | 193                        | 1873   | 1191   | 704    |
| PIT-133     | Fuel Pressure                   | PSIG   | 0.75                       | 0.80   | 0.79  | 0.02  | 0.00                       | 0.83   | 0.41   | 0.12   | 0.31                       | 0.32   | 0.32   | 0.00 | 0.01                       | 38.00  | 0.48   | 1.96   |
| FIT-121     | Fuel Gas Flow                   | CFH    | 1053                       | 1104   | 1092  | 15    | 1                          | 1100   | 647    | 152    | 531                        | 531    | 531    | 0    | 0                          | 1102   | 519    | 493    |
| CEM         |                                 |        |                            |        |       |       |                            |        |        |        |                            |        |        |      |                            |        |        |        |
| NOx-B       | Interconnecting Duct NOx        | ppm    | -1.35                      | 80.85  | 4.85  | 21.08 | -1.28                      | 51.85  | 1.11   | 2.66   | 1.20                       | 1.43   | 1.33   | 0.08 | -1.25                      | 244.28 | -0.47  | 12.56  |
| THC-B       | Interconnecting Duct THC        | ppm    | 2.33                       | 100.00 | 3.94  | 13.22 | 7.13                       | 100.00 | 84.53  | 13.11  | 69.12                      | 71.03  | 69.88  | 0.62 | -1.54                      | 241.58 | 6.15   | 28.40  |
| CO          | Stack's CO                      | ppm    | -1.00                      | 125.00 | 18.79 | 42.44 | -1.00                      | 425.50 | 1.81   | 23.56  | -0.50                      | -0.50  | -0.50  | 0.00 | -0.50                      | 202.95 | 0.46   | 10.65  |
| THC         | Stack's THC                     | ppm    | -5.28                      | 0.75   | -2.88 | 2.26  | -1.1                       | 26.58  | -0.82  | 1.48   | -1.12                      | -0.93  | -1.03  | 0.07 | -1.21                      | 331.13 | 0.51   | 17.08  |
| NOx         | Stack's NOx                     | ppm    | -1.30                      | 83.78  | 38.21 | 24.44 | 0.80                       | 103.33 | 48.79  | 10.62  | 45.60                      | 45.85  | 45.74  | 0.07 | -1.20                      | 381.98 | 25.69  | 30.07  |
| SO2         | Stack SO2                       | ppm    | -1.50                      | 122.00 | 8.29  | 31.82 | -1.50                      | 0.50   | -0.41  | 0.43   | 0.00                       | 0.50   | 0.06   | 0.18 | 0.00                       | 222.08 | 0.88   | 11.35  |
| O2          | Stack's O2                      | %      | -0.28                      | 19.85  | 9.22  | 5.05  | 8.28                       | 20.63  | 11.50  | 1.13   | 11.08                      | 11.10  | 11.08  | 0.01 | 10.95                      | 272.10 | 17.24  | 13.61  |
| CO2         | Stack's CO2                     | %      | -0.12                      | 5.48   | 4.15  | 2.11  | 0.14                       | 8.16   | 5.94   | 0.72   | 6.18                       | 6.20   | 6.19   | 0.01 | -0.06                      | 1771.6 | 7.25   | 90.54  |
| TIT-300     | Ambient Temp                    | Deg. F | 62.42                      | 65.48  | 63.80 | 0.74  | 55.40                      | 68.90  | 60.49  | 4.06   | 55.40                      | 55.76  | 55.63  | 0.19 | 55.04                      | 3185.5 | 63.88  | 160.14 |



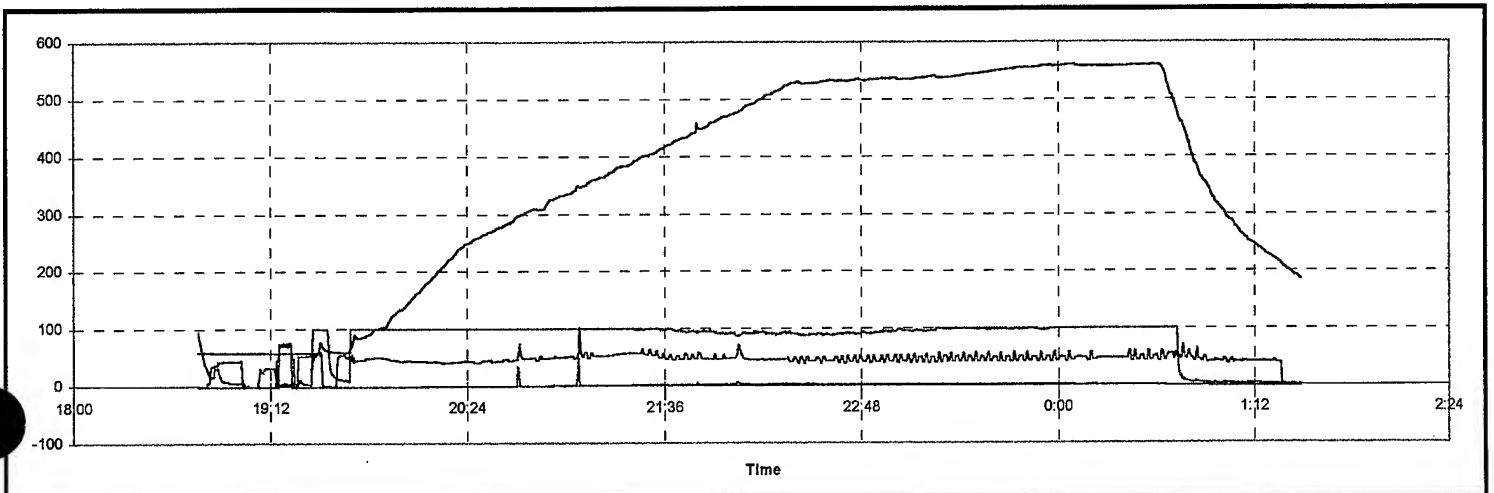


# SUMMARY OF DATA

Date: 20-Feb-96  
Time: 6:45

Test Number: 10  
Soak Time: 1 Hrs.  
Soak Temp: Greater than 550 F

|            |                                 |        | 18:49 |        |       |       | 19:41 |        |        |        | 23:37  |        |        |       | 0:38   |        |        |        | 1:29 |  |  |  |
|------------|---------------------------------|--------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|--------|------|--|--|--|
|            |                                 |        | WARM  |        |       |       | RAMP  |        |        |        | SOAK   |        |        |       | COOL   |        |        |        |      |  |  |  |
| Tag        | Parameter Description           | Unit   | Min.  | Max.   | Ave.  | Std.  | Min.  | Max.   | Ave.   | Std.   | Min.   | Max.   | Ave.   | Std.  | Min.   | Max.   | Ave.   | Std.   |      |  |  |  |
| FURNACE    |                                 |        |       |        |       |       |       |        |        |        |        |        |        |       |        |        |        |        |      |  |  |  |
| PIT-232    | Fuel Gas Pressure               | In.WC  | 3.97  | 11.42  | 4.32  | 0.69  | 3.97  | 12.87  | 12.02  | 1.11   | 11.87  | 12.49  | 12.38  | 0.08  | 3.88   | 11.92  | 4.77   | 1.69   |      |  |  |  |
| FIT-231    | Fuel Gas Flow                   | CFH    | -1.10 | 121.68 | 3.25  | 20.60 | -0.85 | 147.08 | 106.57 | 29.88  | 85.33  | 119.45 | 111.43 | 4.48  | -0.70  | 85.33  | 3.66   | 14.24  |      |  |  |  |
| PIT-222    | Combustion Air Pressure         | In.WC  | 22.19 | 23.89  | 22.31 | 0.17  | 22.19 | 24.53  | 24.22  | 0.30   | 24.36  | 24.53  | 24.41  | 0.03  | 22.50  | 24.40  | 22.72  | 0.40   |      |  |  |  |
| FIT-221    | Combustion Air Flow             | CFH    | 10895 | 13030  | 12925 | 197   | 10570 | 12983  | 10795  | 294    | 10680  | 10922  | 10732  | 31    | 10922  | 13153  | 12889  | 473    |      |  |  |  |
| PIT-158    | Chamber Pressure (Draft)        | In.WC  | -0.84 | -0.18  | -0.37 | 0.10  | -0.84 | -0.17  | -0.24  | 0.06   | -0.25  | -0.17  | -0.24  | 0.01  | -0.89  | -0.1   | -0.44  | 0.21   |      |  |  |  |
| TIT-201    | Recorder Temperature            | Deg.F  | 55.95 | 84.45  | 58.76 | 4.57  | 71.33 | 606.53 | 451.38 | 153.98 | 596.70 | 613.43 | 609.18 | 2.32  | 157.65 | 596.70 | 287.75 | 111.12 |      |  |  |  |
| TIT-202    | Furnace Exit Gas Temp (Control) | Deg.F  | 56.18 | 85.80  | 58.97 | 4.69  | 71.70 | 610.73 | 455.15 | 154.95 | 599.85 | 617.85 | 613.09 | 2.41  | 156.53 | 599.85 | 285.91 | 111.56 |      |  |  |  |
| TIT-203    | Material Thermocouple #1        | Deg.F  | 57.75 | 75.90  | 60.00 | 3.17  | 68.63 | 564.23 | 405.43 | 145.80 | 559.73 | 573.98 | 568.70 | 2.59  | 168.60 | 559.73 | 312.11 | 119.41 |      |  |  |  |
| TIT-204    | Material Thermocouple #2        | Deg.F  | 59.48 | 69.83  | 60.88 | 1.45  | 63.23 | 443.33 | 306.20 | 112.28 | 443.33 | 483.38 | 454.73 | 11.77 | 222.68 | 483.00 | 328.46 | 74.03  |      |  |  |  |
| TIT-205    | Material Thermocouple #3        | Deg.F  | 57.60 | 60.60  | 59.08 | 0.94  | 60.08 | 579.90 | 396.11 | 166.54 | 579.90 | 592.20 | 588.98 | 2.91  | 235.80 | 590.18 | 388.98 | 110.69 |      |  |  |  |
| TIT-206    | Material Thermocouple #4        | Deg.F  | 56.85 | 85.73  | 59.02 | 3.82  | 73.88 | 526.58 | 376.17 | 134.70 | 512.18 | 533.10 | 528.50 | 2.33  | 139.35 | 512.18 | 245.69 | 93.16  |      |  |  |  |
| TIT-207    | Material Thermocouple #5        | Deg.F  | 58.43 | 102.30 | 61.24 | 5.99  | 79.80 | 647.25 | 483.87 | 161.11 | 616.50 | 648.45 | 641.64 | 3.85  | 166.88 | 616.50 | 299.04 | 112.90 |      |  |  |  |
| ARTIFURNER |                                 |        |       |        |       |       |       |        |        |        |        |        |        |       |        |        |        |        |      |  |  |  |
| TIT-131    | Combustor Burner Temp. Control  | Deg. F | 81    | 1850   | 1571  | 351   | 1764  | 1850   | 1810   | 15     | 1782   | 1848   | 1807   | 14    | 674    | 1819   | 1661   | 295    |      |  |  |  |
| FIT-149    | Furnes Flow                     | PPH    | 1534  | 2627   | 2321  | 125   | 1986  | 2676   | 2166   | 91     | 1966   | 2057   | 1998   | 12    | 2057   | 4000   | 3192   | 509    |      |  |  |  |
| PIT-151    | Furnes Pressure                 | InWC   | 0.06  | 0.77   | 0.51  | 0.08  | 0.15  | 0.77   | 0.35   | 0.08   | 0.22   | 0.28   | 0.23   | 0.01  | 0.28   | 2.00   | 1.30   | 0.47   |      |  |  |  |
| TIT-145    | Combustor Temperature           | Deg. F | 89    | 1905   | 1587  | 355   | 1781  | 1873   | 1823   | 17     | 1792   | 1867   | 1821   | 16    | 622    | 1831   | 1662   | 315    |      |  |  |  |
| PIT-133    | Fuel Pressure                   | PSIG   | 0.00  | 0.82   | 0.73  | 0.25  | 0.28  | 0.83   | 0.47   | 0.13   | 0.27   | 0.40   | 0.32   | 0.03  | 0.01   | 0.85   | 0.61   | 0.31   |      |  |  |  |
| FIT-121    | Fuel Gas Flow                   | CFH    | 1     | 1105   | 983   | 333   | 467   | 1105   | 695    | 153    | 466    | 652    | 529    | 55    | 1      | 1097   | 811    | 395    |      |  |  |  |
| CEM        |                                 |        |       |        |       |       |       |        |        |        |        |        |        |       |        |        |        |        |      |  |  |  |
| NOx-B      | Interconnecting Duct NOx        | ppm    | -0.48 | 76.93  | 6.26  | 21.17 | -0.40 | 48.58  | 1.94   | 2.61   | 1.30   | 2.58   | 2.19   | 0.19  | -0.15  | 1.33   | 0.01   | 0.25   |      |  |  |  |
| THC-B      | Interconnecting Duct THC        | ppm    | -1.21 | 100.00 | 22.41 | 29.93 | 86.21 | 100.00 | 96.93  | 3.95   | 96.43  | 100.00 | 99.65  | 0.70  | 1.19   | 100.00 | 14.50  | 29.85  |      |  |  |  |
| CO         | Stack's CO                      | ppm    | -0.50 | 204.50 | 22.57 | 45.83 | -0.50 | -0.50  | -0.50  | 0.00   | -0.50  | -0.50  | -0.50  | 0.00  | -0.50  | 22.00  | -0.10  | 2.16   |      |  |  |  |
| THC        | Stack's THC                     | ppm    | -1.07 | 100.00 | 5.69  | 20.62 | -1.4  | -0.82  | -1.19  | 0.09   | -1.46  | -1.08  | -1.27  | 0.06  | -1.44  | 17.25  | -0.50  | 2.59   |      |  |  |  |
| NOx        | Stack's NOx                     | ppm    | -0.45 | 73.78  | 31.83 | 26.13 | 39.35 | 102.25 | 48.59  | 5.70   | 42.90  | 61.70  | 49.06  | 4.46  | 0.58   | 71.00  | 39.14  | 16.70  |      |  |  |  |
| SO2        | Stack SO2                       | ppm    | 2.00  | 137.00 | 15.75 | 35.42 | 2.50  | 4.50   | 3.54   | 0.48   | 4.00   | 4.50   | 4.13   | 0.22  | 4.00   | 4.50   | 4.26   | 0.25   |      |  |  |  |
| O2         | Stack's O2                      | %      | -0.23 | 20.85  | 9.51  | 6.34  | 10.05 | 12.45  | 11.38  | 0.46   | 10.13  | 12.40  | 11.55  | 0.55  | 10.85  | 20.98  | 14.61  | 2.57   |      |  |  |  |
| CO2        | Stack's CO2                     | %      | -0.14 | 6.90   | 3.54  | 2.60  | 5.44  | 7.02   | 6.17   | 0.29   | 5.48   | 6.92   | 6.04   | 0.36  | 0.02   | 6.4    | 4.01   | 1.63   |      |  |  |  |
| TIT-300    | Ambient Temp                    | Deg. F | 48.20 | 52.88  | 50.87 | 0.96  | 41.72 | 56.66  | 45.87  | 2.32   | 41.36  | 44.78  | 43.06  | 0.69  | 40.46  | 43.5   | 41.85  | 0.66   |      |  |  |  |

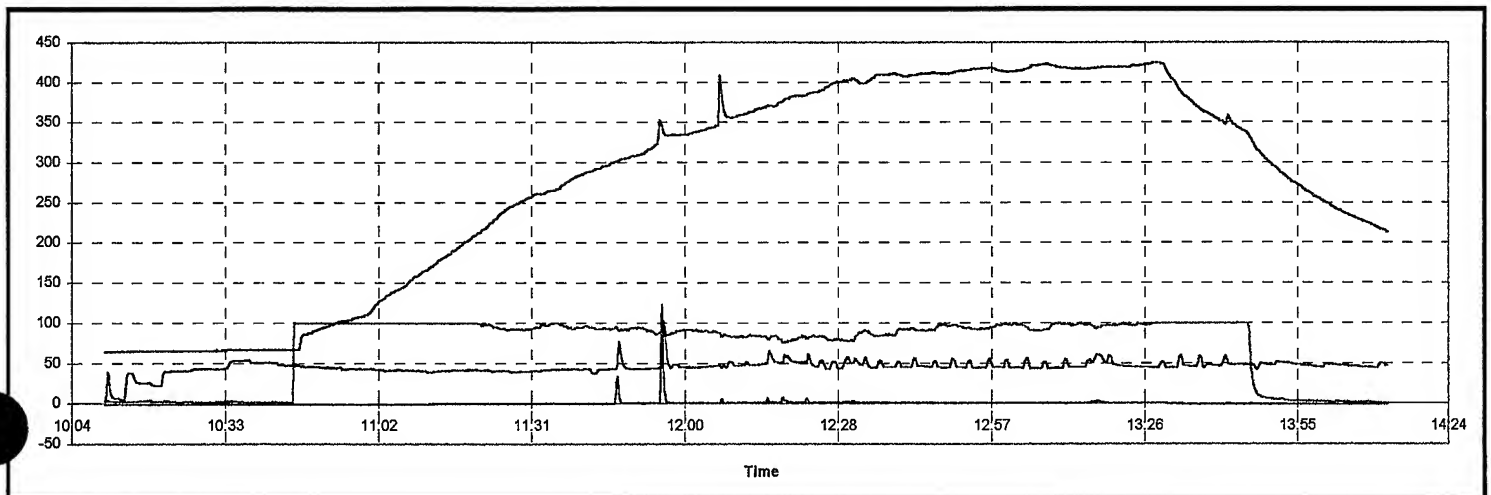


# SUMMARY OF DATA

Date: 22-Feb-96  
Time: 14:30

Test Number: 11  
Soak Time: 1 Hrs.  
Soak Temp: Greater than 400 F

|         |                                 |        | 10:11 |        |       |       | 10:47 |        |        |        | 12:28  |        |        |       | 13:32  |        |        |       | 14:12 |  |  |  |
|---------|---------------------------------|--------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|--------|-------|--------|--------|--------|-------|-------|--|--|--|
|         |                                 |        | WARM  |        |       |       | RAMP  |        |        |        | SOAK   |        |        |       | COOL   |        |        |       |       |  |  |  |
| Tag     | Parameter Description           | Unit   | Min.  | Max.   | Ave.  | Std.  | Min.  | Max.   | Ave.   | Std.   | Min.   | Max.   | Ave.   | Std.  | Min.   | Max.   | Ave.   | Std.  |       |  |  |  |
| FURNACE |                                 |        |       |        |       |       |       |        |        |        |        |        |        |       |        |        |        |       |       |  |  |  |
| PIT-232 | Fuel Gas Pressure               | In.WC  | 4.03  | 4.42   | 4.10  | 0.04  | 4.12  | 11.62  | 10.69  | 1.21   | 8.53   | 11.57  | 11.06  | 0.34  | 4.02   | 11.68  | 5.55   | 2.09  |       |  |  |  |
| FIT-231 | Fuel Gas Flow                   | CFH    | -1.58 | 117.10 | -0.56 | 9.94  | -1.45 | 139.90 | 79.76  | 32.83  | 24.10  | 112.30 | 92.34  | 10.69 | -1.58  | 136.63 | 2.77   | 14.33 |       |  |  |  |
| PIT-222 | Combustion Air Pressure         | In.WC  | 21.44 | 21.72  | 21.53 | 0.07  | 21.47 | 23.16  | 22.91  | 0.24   | 22.33  | 23.04  | 22.91  | 0.08  | 21.10  | 23.00  | 21.61  | 0.54  |       |  |  |  |
| FIT-221 | Combustion Air Flow             | CFH    | 12655 | 12813  | 12727 | 32    | 10419 | 12692  | 10753  | 369    | 10439  | 11345  | 10607  | 95    | 10373  | 12628  | 12181  | 581   |       |  |  |  |
| PIT-158 | Chamber Pressure (Draft)        | In.WC  | -0.40 | -0.19  | -0.33 | 0.05  | -0.34 | -0.14  | -0.26  | 0.02   | -0.48  | -0.25  | -0.41  | 0.06  | -0.45  | 0.0    | -0.23  | 0.08  |       |  |  |  |
| TIT-201 | Recorder Temperature            | Deg.F  | 66.60 | 68.85  | 67.98 | 0.56  | 68.48 | 454.50 | 300.86 | 106.24 | 417.98 | 459.30 | 452.15 | 5.16  | 185.40 | 417.98 | 272.69 | 69.02 |       |  |  |  |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg.F  | 66.75 | 69.00  | 68.14 | 0.57  | 68.55 | 457.58 | 303.16 | 107.00 | 419.33 | 462.38 | 454.82 | 5.39  | 184.43 | 419.33 | 271.87 | 69.96 |       |  |  |  |
| TIT-203 | Material Thermocouple #1        | Deg.F  | 68.03 | 70.88  | 69.46 | 0.81  | 70.13 | 503.33 | 289.18 | 117.47 | 449.10 | 469.95 | 463.47 | 3.87  | 231.75 | 457.05 | 339.50 | 68.02 |       |  |  |  |
| TIT-204 | Material Thermocouple #2        | Deg.F  | 64.80 | 67.43  | 66.13 | 0.73  | 67.13 | 395.03 | 240.91 | 102.43 | 395.03 | 435.98 | 424.71 | 9.88  | 246.45 | 432.98 | 336.00 | 57.15 |       |  |  |  |
| TIT-205 | Material Thermocouple #3        | Deg.F  | 61.95 | 63.23  | 62.54 | 0.35  | 62.93 | 271.58 | 166.49 | 62.45  | 264.75 | 326.55 | 299.46 | 17.53 | 220.65 | 310.88 | 257.29 | 24.94 |       |  |  |  |
| TIT-206 | Material Thermocouple #4        | Deg.F  | 66.83 | 69.30  | 68.32 | 0.68  | 69.15 | 389.70 | 257.75 | 88.55  | 362.33 | 405.00 | 396.27 | 5.58  | 166.73 | 362.33 | 248.18 | 59.30 |       |  |  |  |
| TIT-207 | Material Thermocouple #5        | Deg.F  | 66.08 | 69.00  | 67.88 | 0.69  | 69.00 | 731.78 | 337.42 | 120.49 | 443.18 | 505.13 | 491.94 | 8.12  | 207.30 | 443.18 | 303.03 | 71.84 |       |  |  |  |
| EXHAUST |                                 |        |       |        |       |       |       |        |        |        |        |        |        |       |        |        |        |       |       |  |  |  |
| TE-151  | Combustor Burner Temp. Control  | Deg. F | 339   | 1801   | 1501  | 376   | 1777  | 1827   | 1804   | 11     | 1784   | 1831   | 1805   | 13    | 1767   | 1828   | 1797   | 12    |       |  |  |  |
| FIT-147 | Fumes Flow                      | PPH    | 1969  | 2530   | 2388  | 107   | 2178  | 2384   | 2274   | 40     | 2099   | 2201   | 2146   | 16    | 2146   | 2545   | 2369   | 134   |       |  |  |  |
| PIT-151 | Fumes Pressure                  | InWC   | 0.20  | 0.57   | 0.49  | 0.07  | 0.31  | 0.51   | 0.38   | 0.04   | 0.26   | 0.31   | 0.28   | 0.01  | 0.30   | 0.65   | 0.48   | 0.12  |       |  |  |  |
| TE-145  | Combustor Temperature           | Deg. F | 366   | 1820   | 1526  | 367   | 1786  | 1843   | 1817   | 11     | 1794   | 1847   | 1817   | 15    | 1775   | 1844   | 1808   | 13    |       |  |  |  |
| PIT-133 | Fuel Pressure                   | PSIG   | 0.05  | 0.80   | 0.69  | 0.20  | 0.41  | 0.77   | 0.56   | 0.09   | 0.39   | 0.50   | 0.42   | 0.03  | 0.41   | 0.68   | 0.55   | 0.08  |       |  |  |  |
| PIT-121 | Fuel Gas Flow                   | CFH    | 269   | 1104   | 995   | 214   | 627   | 1073   | 826    | 108    | 621    | 771    | 652    | 45    | 622    | 969    | 804    | 97    |       |  |  |  |
| CEM     |                                 |        |       |        |       |       |       |        |        |        |        |        |        |       |        |        |        |       |       |  |  |  |
| NOx-B   | Interconnecting Duct NOx        | ppm    | -0.48 | -0.38  | -0.43 | 0.03  | -0.48 | 122.38 | 1.32   | 7.09   | 0.05   | 4.58   | 1.32   | 0.59  | -0.63  | 0.08   | -0.41  | 0.14  |       |  |  |  |
| THC-B   | Interconnecting Duct THC        | ppm    | 1.53  | 100.00 | 5.16  | 16.21 | 75.70 | 100.00 | 93.10  | 6.88   | 77.29  | 100.00 | 93.90  | 5.75  | 0.33   | 100.00 | 38.10  | 45.87 |       |  |  |  |
| CO      | Stack's CO                      | ppm    | -0.50 | 102.00 | 9.05  | 25.44 | -0.50 | -0.50  | -0.50  | 0.00   | -0.50  | -0.50  | -0.50  | 0.00  | -0.50  | -0.50  | -0.50  | 0.00  |       |  |  |  |
| THC     | Stack's THC                     | ppm    | -1.28 | 2.08   | -0.93 | 0.63  | -1.4  | -1.04  | -1.26  | 0.07   | -1.46  | -1.18  | -1.32  | 0.05  | -1.50  | -1.21  | -1.35  | 0.06  |       |  |  |  |
| NOx     | Stack's NOx                     | ppm    | 3.10  | 54.38  | 39.68 | 13.35 | 37.90 | 102.45 | 45.29  | 6.51   | 43.80  | 60.78  | 48.08  | 4.13  | 42.60  | 59.70  | 48.48  | 2.97  |       |  |  |  |
| SO2     | Stack SO2                       | ppm    | 6.50  | 7.00   | 6.54  | 0.13  | 6.50  | 7.00   | 6.51   | 0.07   | 6.50   | 7.00   | 6.59   | 0.19  | 6.50   | 7.00   | 6.55   | 0.15  |       |  |  |  |
| O2      | Stack's O2                      | %      | 11.48 | 19.60  | 13.04 | 1.83  | 10.60 | 12.28  | 11.52  | 0.25   | 10.55  | 12.73  | 11.71  | 0.44  | 11.78  | 14.05  | 13.03  | 0.37  |       |  |  |  |
| CO2     | Stack's CO2                     | %      | 0.92  | 6.06   | 5.05  | 1.20  | 5.56  | 6.64   | 6.05   | 0.17   | 5.22   | 6.68   | 5.92   | 0.29  | 4.36   | 5.9    | 5.04   | 0.25  |       |  |  |  |
| TIT-300 | Ambient Temp                    | Deg. F | 64.22 | 66.20  | 65.18 | 0.48  | 64.58 | 67.64  | 66.15  | 0.71   | 65.84  | 68.18  | 67.29  | 0.46  | 67.28  | 72.1   | 69.13  | 1.31  |       |  |  |  |



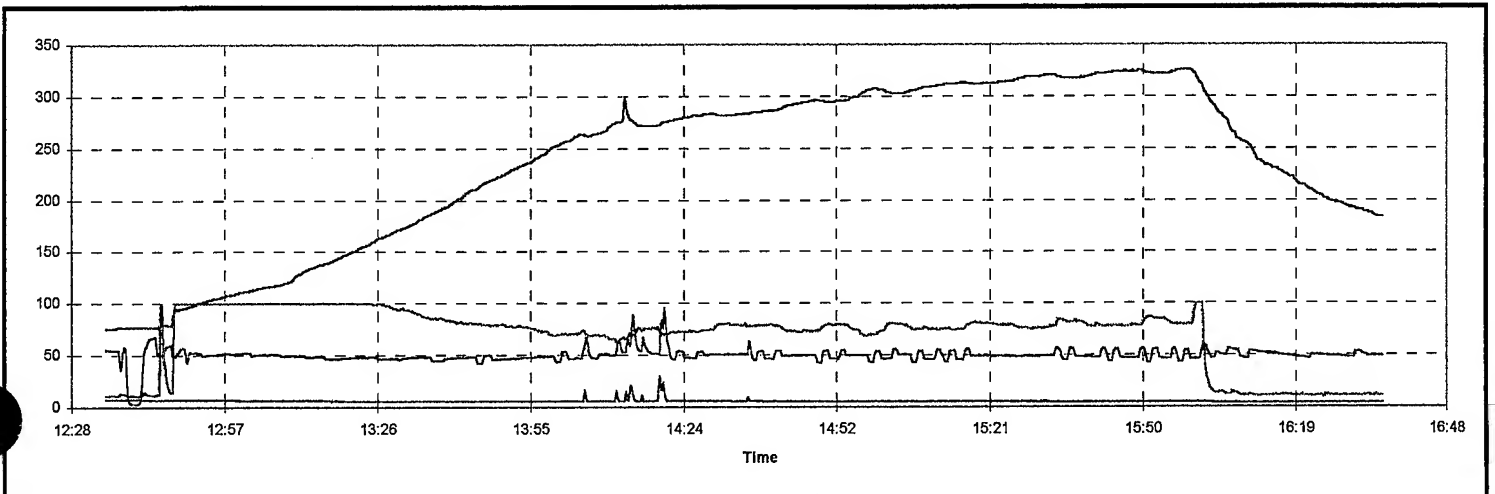


# SUMMARY OF DATA

Date: 26-Feb-96  
Time: 18:40

Test Number: 12  
Soak Time: 1 Hrs.  
Soak Temp: Greater than 300 F

|         |                                 |        | 12:35 |        |       |       | 12:47 |        |        |       | 14:55  |        |        |       | 16:02  |        |        |       | 16:41 |  |  |  |
|---------|---------------------------------|--------|-------|--------|-------|-------|-------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|-------|-------|--|--|--|
|         |                                 |        | WARM  |        |       |       | RAMP  |        |        |       | SOAK   |        |        |       | COOL   |        |        |       |       |  |  |  |
| Tag     | Parameter Description           | Unit   | Min.  | Max.   | Ave.  | Std.  | Min.  | Max.   | Ave.   | Std.  | Min.   | Max.   | Ave.   | Std.  | Min.   | Max.   | Ave.   | Std.  |       |  |  |  |
| FURNACE |                                 |        |       |        |       |       |       |        |        |       |        |        |        |       |        |        |        |       |       |  |  |  |
| PIT-232 | Fuel Gas Pressure               | In.WC  | 3.68  | 7.83   | 4.03  | 0.59  | 5.39  | 10.84  | 9.73   | 1.18  | 4.20   | 10.74  | 10.19  | 0.93  | 3.93   | 4.20   | 3.99   | 0.05  |       |  |  |  |
| FIT-231 | Fuel Gas Flow                   | CFH    | -2.13 | 99.20  | 0.79  | 15.21 | 0.48  | 132.50 | 57.84  | 28.78 | -1.73  | 83.88  | 67.45  | 14.28 | -1.73  | -1.50  | -1.64  | 0.05  |       |  |  |  |
| PIT-222 | Combustion Air Pressure         | In.WC  | 20.77 | 22.16  | 20.87 | 0.19  | 20.82 | 22.51  | 22.20  | 0.27  | 21.09  | 22.52  | 22.36  | 0.20  | 20.97  | 21.11  | 21.03  | 0.03  |       |  |  |  |
| FIT-221 | Combustion Air Flow             | CFH    | 11052 | 12559  | 12463 | 205   | 10445 | 12400  | 10802  | 357   | 10502  | 12461  | 10684  | 278   | 12448  | 12580  | 12536  | 19    |       |  |  |  |
| PIT-158 | Chamber Pressure (Draft)        | In.WC  | -0.67 | 0.00   | -0.28 | 0.09  | -0.42 | -0.13  | -0.22  | 0.02  | -0.23  | -0.18  | -0.20  | 0.01  | -0.29  | -0.2   | -0.24  | 0.02  |       |  |  |  |
| TIT-201 | Recorder Temperature            | Deg.F  | 80.48 | 86.48  | 81.99 | 1.72  | 84.30 | 363.68 | 272.51 | 86.49 | 300.15 | 376.43 | 366.64 | 8.93  | 153.68 | 300.15 | 195.82 | 33.94 |       |  |  |  |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg.F  | 80.55 | 86.85  | 82.23 | 1.75  | 84.45 | 366.45 | 274.35 | 87.07 | 299.10 | 379.50 | 368.86 | 9.30  | 153.23 | 299.10 | 194.67 | 33.59 |       |  |  |  |
| TIT-203 | Material Thermocouple #1        | Deg.F  | 81.08 | 86.78  | 82.51 | 1.81  | 85.50 | 363.08 | 263.26 | 91.55 | 362.03 | 375.83 | 371.95 | 2.57  | 146.78 | 362.03 | 213.54 | 63.61 |       |  |  |  |
| TIT-204 | Material Thermocouple #2        | Deg.F  | 63.00 | 64.28  | 63.57 | 0.33  | 64.05 | 176.93 | 110.10 | 35.17 | 176.93 | 228.53 | 205.91 | 15.35 | 206.55 | 228.45 | 216.23 | 6.18  |       |  |  |  |
| TIT-205 | Material Thermocouple #3        | Deg.F  | 77.70 | 79.58  | 78.34 | 0.52  | 79.13 | 283.13 | 186.92 | 67.03 | 282.83 | 341.10 | 317.42 | 17.93 | 213.90 | 325.43 | 262.50 | 31.39 |       |  |  |  |
| TIT-206 | Material Thermocouple #4        | Deg.F  | 81.15 | 87.08  | 82.37 | 1.51  | 84.00 | 296.18 | 225.93 | 66.08 | 263.10 | 304.80 | 299.15 | 5.72  | 136.95 | 263.10 | 178.51 | 32.68 |       |  |  |  |
| TIT-207 | Material Thermocouple #5        | Deg.F  | 80.78 | 88.43  | 82.23 | 1.90  | 84.08 | 493.88 | 283.80 | 92.96 | 322.65 | 396.98 | 385.86 | 8.87  | 173.10 | 322.65 | 222.69 | 39.03 |       |  |  |  |
|         |                                 |        |       |        |       |       |       |        |        |       |        |        |        |       |        |        |        |       |       |  |  |  |
| PIT-151 | Combustor Burner Temp. Control  | Deg. F | 1125  | 1803   | 1624  | 224   | 1772  | 1837   | 1807   | 10    | 1774   | 1837   | 1804   | 13    | 1774   | 1816   | 1797   | 10    |       |  |  |  |
| PIT-149 | Fumes Flow                      | PPH    | 1122  | 2962   | 2290  | 248   | 2053  | 2514   | 2206   | 68    | 2162   | 2381   | 2221   | 19    | 2345   | 2539   | 2467   | 42    |       |  |  |  |
| PIT-151 | Fumes Pressure                  | In.WC  | -0.06 | 1.04   | 0.44  | 0.16  | 0.22  | 0.59   | 0.33   | 0.05  | 0.32   | 0.51   | 0.36   | 0.02  | 0.50   | 0.66   | 0.61   | 0.04  |       |  |  |  |
| TIT-145 | Combustor Temperature           | Deg. F | 1087  | 1820   | 1629  | 244   | 1780  | 1854   | 1819   | 11    | 1783   | 1851   | 1815   | 14    | 1781   | 1827   | 1806   | 10    |       |  |  |  |
| PIT-153 | Fuel Pressure                   | PSIG   | 0.00  | 0.79   | 0.60  | 0.31  | 0.42  | 0.79   | 0.53   | 0.08  | 0.42   | 0.52   | 0.46   | 0.03  | 0.47   | 0.69   | 0.63   | 0.05  |       |  |  |  |
| PIT-127 | Fuel Gas Flow                   | CFH    | 0     | 1102   | 838   | 450   | 652   | 1102   | 809    | 94    | 645    | 795    | 717    | 44    | 727    | 984    | 907    | 57    |       |  |  |  |
| CEM     |                                 |        |       |        |       |       |       |        |        |       |        |        |        |       |        |        |        |       |       |  |  |  |
| NOx-B   | Interconnecting Duct NOx        | ppm    | 7.45  | 8.18   | 7.79  | 0.21  | 5.65  | 29.80  | 6.61   | 1.97  | 4.75   | 5.78   | 5.27   | 0.27  | 4.23   | 4.83   | 4.43   | 0.12  |       |  |  |  |
| THC-B   | Interconnecting Duct THC        | ppm    | 10.98 | 100.00 | 17.81 | 18.52 | 14.19 | 100.00 | 84.15  | 12.60 | 25.88  | 100.00 | 78.45  | 6.82  | 10.01  | 25.88  | 11.87  | 1.76  |       |  |  |  |
| CO      | Stack's CO                      | ppm    | 0.00  | 98.50  | 8.79  | 20.71 | 0.00  | 0.50   | 0.00   | 0.05  | 0.00   | 0.50   | 0.00   | 0.04  | 0.00   | 0.50   | 0.00   | 0.04  |       |  |  |  |
| THC     | Stack's THC                     | ppm    | -2.66 | -2.13  | -2.43 | 0.20  | -2.9  | -2.06  | -2.22  | 0.17  | -2.12  | -2.01  | -2.06  | 0.02  | -2.49  | -2.04  | -2.29  | 0.09  |       |  |  |  |
| NOx     | Stack's NOx                     | ppm    | 3.40  | 67.73  | 44.44 | 22.00 | 42.55 | 95.98  | 50.52  | 5.28  | 43.38  | 59.13  | 49.89  | 3.58  | 47.28  | 56.95  | 50.35  | 2.15  |       |  |  |  |
| SO2     | Stack SO2                       | ppm    | 1.50  | 1.50   | 1.50  | 0.00  | 0.50  | 1.50   | 1.04   | 0.16  | 0.50   | 1.00   | 1.00   | 0.03  | 1.00   | 1.50   | 1.03   | 0.13  |       |  |  |  |
| O2      | Stack's O2                      | %      | 9.65  | 18.48  | 12.30 | 3.14  | 9.48  | 11.38  | 10.44  | 0.25  | 9.98   | 11.53  | 10.72  | 0.35  | 11.23  | 12.28  | 11.61  | 0.18  |       |  |  |  |
| CO2     | Stack's CO2                     | %      | 0.16  | 4.82   | 3.42  | 1.65  | 3.98  | 4.90   | 4.39   | 0.12  | 3.88   | 4.64   | 4.28   | 0.17  | 3.50   | 4.0    | 3.86   | 0.10  |       |  |  |  |
| TIT-300 | Ambient Temp                    | Deg. F | 78.08 | 81.50  | 79.71 | 0.72  | 77.90 | 82.40  | 79.74  | 1.16  | 75.56  | 79.52  | 77.40  | 0.98  | 73.58  | 76.8   | 75.36  | 0.79  |       |  |  |  |

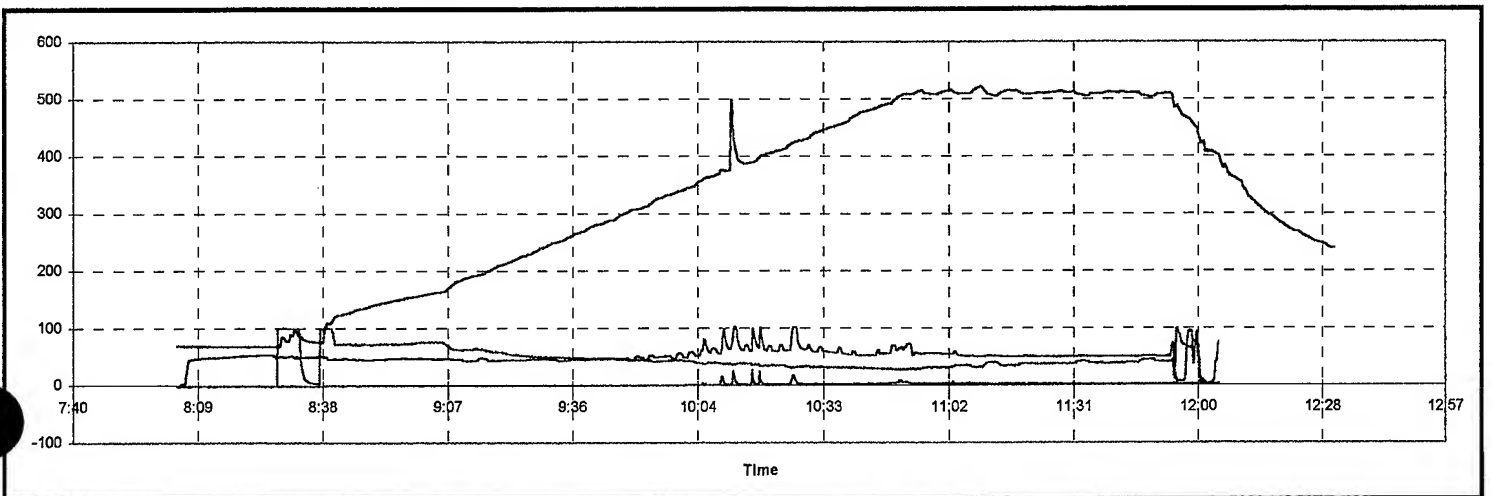


# SUMMARY OF DATA

Date: 27-Feb-96  
Time: 15:00

Test Number: 13  
Soak Time: 1 Hrs.  
Soak Temp: Greater than 500 F

|         |                                 |        | 8:04 WARM 8:28 |        |       |       | 8:28 RAMP 10:50 |        |        |        | 10:50 SOAK 11:54 |        |        |       | 11:54 COOL 13:03 |        |        |        |
|---------|---------------------------------|--------|----------------|--------|-------|-------|-----------------|--------|--------|--------|------------------|--------|--------|-------|------------------|--------|--------|--------|
|         |                                 |        | Min.           | Max.   | Ave.  | Std.  | Min.            | Max.   | Ave.   | Std.   | Min.             | Max.   | Ave.   | Std.  | Min.             | Max.   | Ave.   | Std.   |
| Tag     | Parameter Description           | Unit   |                |        |       |       |                 |        |        |        |                  |        |        |       |                  |        |        |        |
| FURNACE |                                 |        |                |        |       |       |                 |        |        |        |                  |        |        |       |                  |        |        |        |
| PIT-232 | Fuel Gas Pressure               | In.WC  | 4.06           | 11.50  | 4.21  | 0.75  | 4.09            | 11.87  | 9.85   | 1.72   | 4.30             | 11.38  | 10.93  | 0.45  | 2.68             | 11.18  | 4.12   | 1.99   |
| FIT-231 | Fuel Gas Flow                   | CFH    | -1.38          | 133.60 | 2.09  | 19.66 | -1.40           | 161.68 | 83.51  | 38.51  | -1.55            | 149.85 | 116.18 | 15.27 | -1.75            | 151.93 | 6.35   | 21.55  |
| PIT-222 | Combustion Air Pressure         | In.WC  | 21.54          | 23.25  | 21.64 | 0.17  | 20.85           | 23.43  | 23.19  | 0.44   | 22.05            | 23.38  | 23.29  | 0.08  | 21.37            | 23.30  | 21.81  | 0.46   |
| FIT-221 | Combustion Air Flow             | CFH    | 10628          | 12788  | 12720 | 214   | 9913            | 13464  | 10430  | 661    | 9891             | 11775  | 10026  | 120   | 9945             | 12188  | 11794  | 509    |
| PIT-158 | Chamber Pressure (Draft)        | In.WC  | -0.37          | -0.26  | -0.31 | 0.02  | -0.57           | -0.15  | -0.25  | 0.04   | -0.26            | -0.17  | -0.21  | 0.01  | -1.00            | -0.1   | -0.53  | 0.20   |
| TIT-201 | Recorder Temperature            | Deg.F  | 68.63          | 79.28  | 69.12 | 1.07  | 75.68           | 561.75 | 317.23 | 139.63 | 531.38           | 576.38 | 553.80 | 10.88 | 145.43           | 531.38 | 254.00 | 100.27 |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg.F  | 68.78          | 78.60  | 69.23 | 0.99  | 76.05           | 566.18 | 319.71 | 140.74 | 534.90           | 580.43 | 557.10 | 11.34 | 144.90           | 534.90 | 252.59 | 100.58 |
| TIT-203 | Material Thermocouple #1        | Deg.F  | 69.60          | 77.55  | 70.19 | 0.77  | 77.55           | 1028.6 | 328.34 | 154.67 | 525.08           | 594.53 | 562.17 | 17.13 | 127.05           | 525.08 | 244.95 | 111.29 |
| TIT-204 | Material Thermocouple #2        | Deg.F  | 69.00          | 70.35  | 69.22 | 0.17  | 70.35           | 392.63 | 225.26 | 93.77  | 392.63           | 430.05 | 415.44 | 8.73  | 182.70           | 427.80 | 260.00 | 70.25  |
| TIT-205 | Material Thermocouple #3        | Deg.F  | 69.68          | 71.10  | 70.09 | 0.18  | 71.10           | 431.78 | 227.82 | 106.73 | 431.78           | 514.13 | 490.39 | 22.51 | 216.30           | 513.45 | 345.04 | 90.79  |
| TIT-206 | Material Thermocouple #4        | Deg.F  | 69.45          | 77.78  | 70.00 | 0.81  | 75.83           | 473.18 | 264.07 | 115.44 | 464.70           | 493.73 | 479.96 | 5.96  | 144.75           | 464.70 | 247.08 | 89.63  |
| TIT-207 | Material Thermocouple #5        | Deg.F  | 70.13          | 80.70  | 70.47 | 1.05  | 76.58           | 626.25 | 353.03 | 155.12 | 574.88           | 636.83 | 607.84 | 13.72 | 155.25           | 574.88 | 279.58 | 109.21 |
|         |                                 |        |                |        |       |       |                 |        |        |        |                  |        |        |       |                  |        |        |        |
| PIT-151 | Combustor Burner Temp. Control  | Deg. F | 66             | 1787   | 1446  | 524   | 1777            | 1836   | 1808   | 13     | -463             | 1850   | 663    | 1150  | -463             | -462   | -462   | 0      |
| PIT-149 | Fumes Flow                      | PPH    | 2211           | 2399   | 2276  | 46    | 2124            | 2460   | 2197   | 53     | 2150             | 2287   | 2199   | 17    | 1691             | 3714   | 3193   | 433    |
| PIT-181 | Fumes Pressure                  | InWC   | 0.42           | 0.58   | 0.46  | 0.04  | 0.29            | 0.63   | 0.36   | 0.06   | 0.28             | 0.33   | 0.31   | 0.01  | 0.07             | 1.77   | 1.26   | 0.44   |
| TIT-145 | Combustor Temperature           | Deg. F | 68             | 1805   | 1474  | 521   | 1786            | 1852   | 1821   | 14     | -500             | 1904   | 1794   | 205   | 1034             | 1912   | 1572   | 297    |
| PIT-155 | Fuel Pressure                   | PSIG   | 0.02           | 0.81   | 0.74  | 0.21  | 0.31            | 0.80   | 0.54   | 0.11   | 0.00             | 0.63   | 0.39   | 0.06  | 0.00             | 0.81   | 0.57   | 0.28   |
| PIT-152 | Fuel Gas Flow                   | CFH    | 125            | 1105   | 1028  | 251   | 552             | 1102   | 803    | 134    | 1                | 883    | 613    | 62    | 1                | 1101   | 838    | 341    |
| CEM     |                                 |        |                |        |       |       |                 |        |        |        |                  |        |        |       |                  |        |        |        |
| NOx-B   | Interconnecting Duct NOx        | ppm    | -0.45          | -0.23  | -0.37 | 0.04  | -0.33           | 27.00  | 1.44   | 2.81   | 2.93             | 9.33   | 3.47   | 0.87  | 2.70             | 3.90   | 2.98   | 0.25   |
| THC-B   | Interconnecting Duct THC        | ppm    | -1.57          | 100.00 | 3.11  | 20.09 | 3.08            | 100.00 | 50.94  | 19.83  | 27.29            | 45.83  | 36.86  | 4.56  | -1.07            | 100.00 | 11.36  | 26.71  |
| CO      | Stack's CO                      | ppm    | 0.00           | 170.50 | 9.96  | 35.68 | -0.50           | 0.50   | 0.02   | 0.11   | 0.00             | 0.50   | 0.00   | 0.03  | 0.00             | 321.50 | 35.60  | 58.66  |
| THC     | Stack's THC                     | ppm    | 1.73           | 62.44  | 3.71  | 8.37  | 1.7             | 2.57   | 1.73   | 0.05   | 1.71             | 2.11   | 1.76   | 0.04  | 0.88             | 38.26  | 3.21   | 5.36   |
| NOx     | Stack's NOx                     | ppm    | -0.98          | 54.48  | 45.44 | 15.13 | 43.25           | 102.28 | 53.12  | 10.77  | 49.70            | 73.85  | 53.03  | 4.57  | 3.80             | 76.83  | 36.41  | 22.31  |
| SO2     | Stack SO2                       | ppm    | 1.00           | 1.50   | 1.18  | 0.24  | 1.00            | 2.50   | 1.33   | 0.38   | 1.50             | 2.50   | 2.06   | 0.29  | 2.00             | 3.00   | 2.42   | 0.26   |
| O2      | Stack's O2                      | %      | 10.25          | 18.45  | 11.24 | 2.29  | 8.50            | 10.68  | 10.00  | 0.38   | 8.20             | 11.88  | 10.03  | 0.35  | 7.98             | 18.18  | 12.90  | 2.23   |
| CO2     | Stack's CO2                     | %      | 0.12           | 5.90   | 5.25  | 1.61  | 5.62            | 7.00   | 6.05   | 0.25   | 4.56             | 7.22   | 5.93   | 0.25  | 0.18             | 7.4    | 3.76   | 1.62   |
| TIT-300 | Ambient Temp                    | Deg. F | 62.42          | 63.50  | 62.94 | 0.21  | 63.14           | 70.88  | 66.21  | 1.82   | 68.54            | 69.98  | 69.09  | 0.37  | 69.26            | 622.6  | 74.37  | 33.11  |

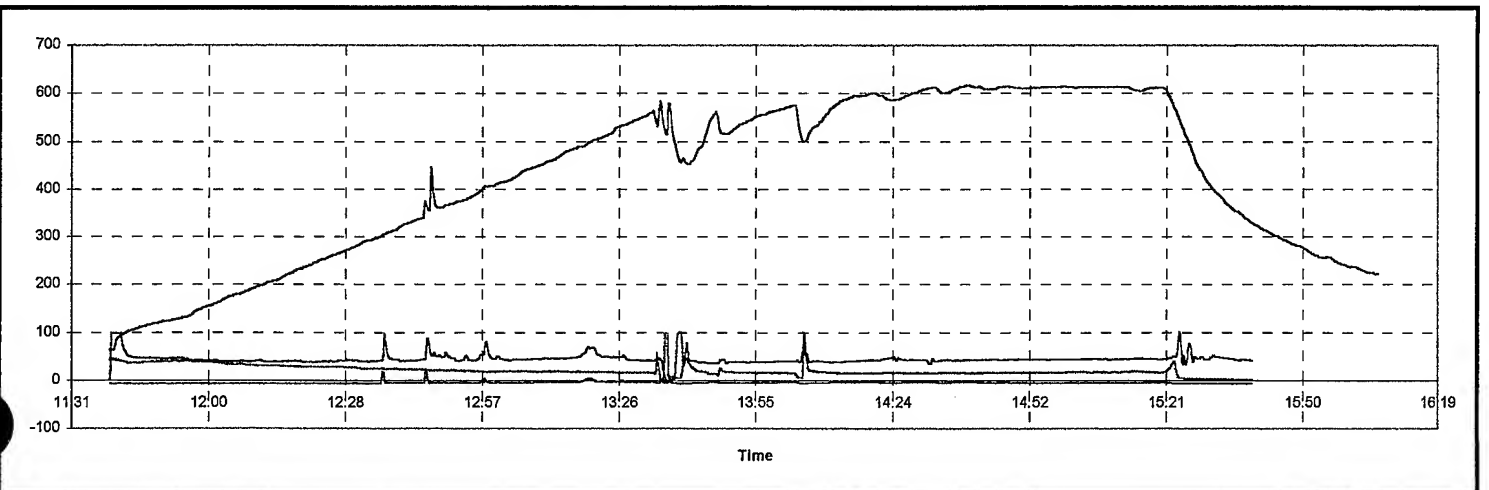


# SUMMARY OF DATA

Date: 28-Feb-96  
Time: 17:19

Test Number: 14  
Soak Time: 1 Hrs.  
Soak Temp: Greater than 600 F

| Tag     | Parameter Description           | Unit   | 11:39 WARM 11:40 |        |        |       | 11:40 RAMP 14:18 |        |        |        | 14:18 SOAK 15:21 |        |        |       | 15:21 COOL 15:54 |        |        |        |
|---------|---------------------------------|--------|------------------|--------|--------|-------|------------------|--------|--------|--------|------------------|--------|--------|-------|------------------|--------|--------|--------|
|         |                                 |        | Min.             | Max.   | Ave.   | Std.  | Min.             | Max.   | Ave.   | Std.   | Min.             | Max.   | Ave.   | Std.  | Min.             | Max.   | Ave.   | Std.   |
| FURNACE |                                 |        |                  |        |        |       |                  |        |        |        |                  |        |        |       |                  |        |        |        |
| PIT-232 | Fuel Gas Pressure               | In.WC  | 3.65             | 11.04  | 7.66   | 1.86  | 3.81             | 13.16  | 10.61  | 1.48   | 3.84             | 11.95  | 11.42  | 1.18  | 3.30             | 11.54  | 6.47   | 3.70   |
| FIT-231 | Fuel Gas Flow                   | CFH    | -1.60            | 146.20 | 44.33  | 33.32 | -1.40            | 400.00 | 110.39 | 51.96  | -1.40            | 178.55 | 143.95 | 27.92 | -1.18            | 130.43 | 44.33  | 60.40  |
| PIT-222 | Combustion Air Pressure         | In.WC  | 22.16            | 23.57  | 22.99  | 0.38  | 22.39            | 23.91  | 23.57  | 0.26   | 22.46            | 24.05  | 23.89  | 0.22  | 22.50            | 24.09  | 23.11  | 0.69   |
| FIT-221 | Combustion Air Flow             | CFH    | 10147            | 12070  | 11028  | 491   | 9919             | 12097  | 10241  | 390    | 9972             | 12106  | 10106  | 307   | 10109            | 12278  | 11462  | 989    |
| PIT-158 | Chamber Pressure (Draft)        | In.WC  | -0.39            | -0.15  | -0.31  | 0.05  | -0.43            | -0.08  | -0.25  | 0.05   | -0.45            | -0.21  | -0.36  | 0.05  | -0.97            | -0.3   | -0.44  | 0.10   |
| TIT-201 | Recorder Temperature            | Deg.F  | 64.65            | 131.03 | 104.48 | 23.17 | 131.03           | 672.45 | 414.84 | 159.84 | 515.78           | 682.28 | 652.52 | 33.32 | 189.75           | 668.78 | 430.81 | 191.24 |
| TIT-202 | Furnace Exit Gas Temp (Control) | Deg.F  | 65.10            | 132.53 | 105.60 | 23.59 | 132.53           | 677.63 | 418.35 | 161.10 | 515.93           | 687.38 | 657.14 | 33.89 | 188.93           | 672.75 | 431.06 | 193.84 |
| TIT-203 | Material Thermocouple #1        | Deg.F  | 66.30            | 119.85 | 99.06  | 18.40 | 119.85           | 646.0  | 385.23 | 154.41 | 546.90           | 657.75 | 624.75 | 30.22 | 150.15           | 651.30 | 408.80 | 202.79 |
| TIT-204 | Material Thermocouple #2        | Deg.F  | 65.33            | 98.33  | 84.13  | 12.30 | 98.33            | 408.60 | 261.24 | 97.10  | 395.25           | 497.85 | 458.57 | 28.91 | 241.73           | 512.55 | 389.16 | 102.58 |
| TIT-205 | Material Thermocouple #3        | Deg.F  | 65.25            | 75.53  | 69.27  | 3.38  | 75.53            | 540.23 | 308.62 | 152.64 | 532.58           | 629.03 | 591.90 | 30.22 | 275.18           | 632.85 | 497.61 | 131.62 |
| TIT-206 | Material Thermocouple #4        | Deg.F  | 65.33            | 116.48 | 99.96  | 17.90 | 116.48           | 588.98 | 343.82 | 134.51 | 413.55           | 594.30 | 557.34 | 34.92 | 134.10           | 582.90 | 345.51 | 185.92 |
| TIT-207 | Material Thermocouple #5        | Deg.F  | 66.53            | 143.33 | 116.19 | 27.66 | 143.33           | 923.70 | 457.77 | 177.60 | 543.30           | 741.60 | 703.15 | 33.79 | 202.50           | 711.08 | 455.20 | 203.08 |
|         |                                 |        |                  |        |        |       |                  |        |        |        |                  |        |        |       |                  |        |        |        |
| PIT-151 | Combustor Burner Temp. Control  | Deg. F | -463             | -462   | -462   | 0     | -463             | -462   | -462   | 0      | -463             | -462   | -462   | 0     | -463             | -462   | -462   | 0      |
| CFI-149 | Fumes Flow                      | PPH    | 2301             | 2412   | 2341   | 25    | 2069             | 2713   | 2238   | 97     | 2100             | 2705   | 2204   | 94    | 2081             | 3411   | 2753   | 510    |
| PIT-151 | Fumes Pressure                  | InWC   | 0.47             | 0.59   | 0.52   | 0.03  | 0.22             | 0.69   | 0.37   | 0.08   | 0.25             | 0.72   | 0.33   | 0.06  | 0.27             | 1.54   | 0.88   | 0.48   |
| TIT-145 | Combustor Temperature           | Deg. F | 1811             | 1853   | 1832   | 14    | 1282             | 1873   | 1831   | 69     | 1801             | 1874   | 1833   | 15    | 1786             | 1907   | 1829   | 15     |
| PIT-133 | Fuel Pressure                   | PSIG   | 0.71             | 0.78   | 0.74   | 0.03  | 0.00             | 0.82   | 0.51   | 0.13   | 0.29             | 0.53   | 0.38   | 0.05  | 0.33             | 0.83   | 0.62   | 0.23   |
| PIT-121 | Fuel Gas Flow                   | CFH    | 1007             | 1078   | 1041   | 32    | 1                | 1097   | 765    | 167    | 493              | 781    | 601    | 45    | 547              | 1099   | 866    | 250    |
| CEM     |                                 |        |                  |        |        |       |                  |        |        |        |                  |        |        |       |                  |        |        |        |
| NOx-B   | Interconnecting Duct NOx        | ppm    | -5.65            | -5.33  | -5.46  | 0.09  | -5.48            | 23.08  | -3.93  | 2.55   | -5.35            | -3.15  | -3.69  | 0.34  | -5.98            | -3.48  | -5.13  | 0.97   |
| THC-B   | Interconnecting Duct THC        | ppm    | 2.18             | 100.00 | 70.45  | 27.21 | 3.84             | 100.00 | 26.28  | 11.43  | 5.44             | 100.00 | 17.18  | 6.81  | 2.44             | 40.31  | 8.80   | 8.02   |
| CO      | Stack's CO                      | ppm    | -0.50            | 0.50   | 0.00   | 0.15  | -0.50            | 497.00 | 5.71   | 47.75  | -0.50            | 0.50   | 0.04   | 0.15  | 0.00             | 0.50   | 0.06   | 0.16   |
| THC     | Stack's THC                     | ppm    | -0.72            | -0.14  | -0.68  | 0.12  | -0.8             | 100.00 | -0.04  | 6.76   | -0.77            | 0.24   | -0.71  | 0.07  | -0.78            | -0.43  | -0.73  | 0.03   |
| NOx     | Stack's NOx                     | ppm    | 36.70            | 45.85  | 40.86  | 2.91  | -0.58            | 102.10 | 44.57  | 10.77  | 36.05            | 60.30  | 42.76  | 3.27  | 34.33            | 102.55 | 44.84  | 5.89   |
| SO2     | Stack SO2                       | ppm    | 2.00             | 2.50   | 2.02   | 0.10  | 2.00             | 2.50   | 2.02   | 0.10   | 1.50             | 2.50   | 2.00   | 0.05  | 2.00             | 2.50   | 2.16   | 0.23   |
| O2      | Stack's O2                      | %      | 10.90            | 12.05  | 11.58  | 0.28  | 8.98             | 18.83  | 11.01  | 1.06   | 10.10            | 13.50  | 10.82  | 0.48  | 10.88            | 14.83  | 12.31  | 1.00   |
| CO2     | Stack's CO2                     | %      | 5.46             | 6.18   | 5.76   | 0.19  | 1.08             | 7.06   | 6.10   | 0.69   | 4.48             | 6.68   | 6.24   | 0.30  | 3.68             | 6.2    | 5.26   | 0.69   |
| TIT-300 | Ambient Temp                    | Deg. F | 59.72            | 61.52  | 60.34  | 0.44  | 57.74            | 63.14  | 60.41  | 1.26   | 55.40            | 60.44  | 57.43  | 0.95  | 52.70            | 55.8   | 54.32  | 0.76   |

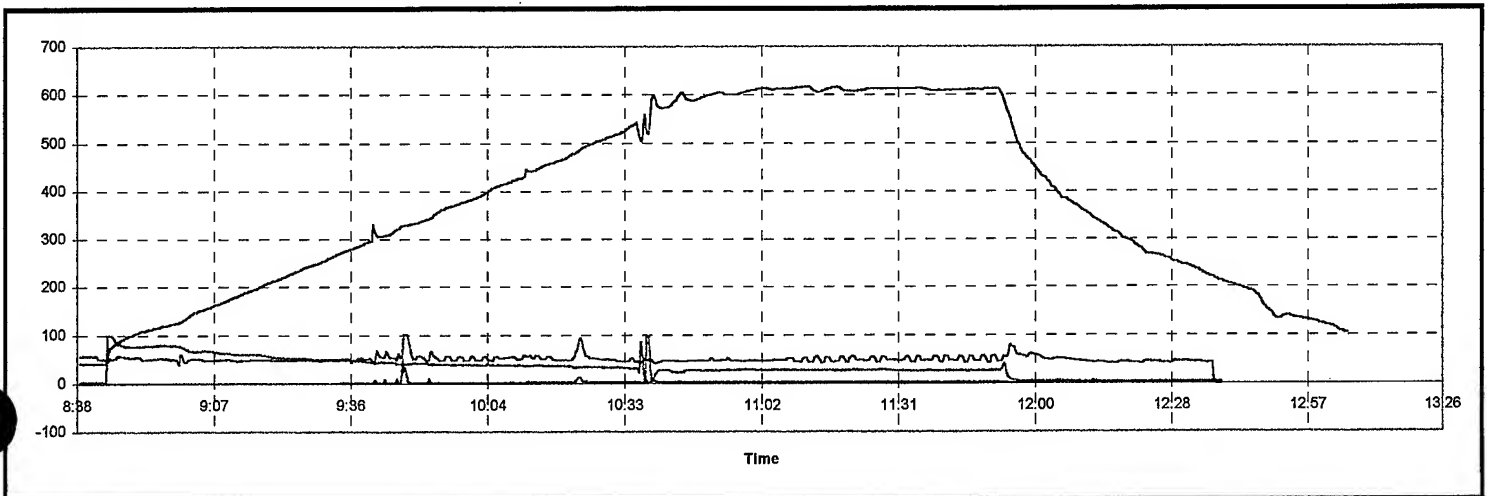


# SUMMARY OF DATA

Date: 1-Mar-96  
Time: 15:00

Test Number: 15  
Soak Time: 1 Hrs.  
Soak Temp: Greater than 600 F

|              |                                 |        | 8:39 WARM 8:44 |        |       |       | 8:44 RAMP 10:51 |        |        |        | 10:51 SOAK 11:52 |        |        |       | 11:52 COOL 13:14 |        |        |        |
|--------------|---------------------------------|--------|----------------|--------|-------|-------|-----------------|--------|--------|--------|------------------|--------|--------|-------|------------------|--------|--------|--------|
| Tag          | Parameter Description           | Unit   | Min.           | Max.   | Ave.  | Std.  | Min.            | Max.   | Ave.   | Std.   | Min.             | Max.   | Ave.   | Std.  | Min.             | Max.   | Ave.   | Std.   |
| FURNACE      |                                 |        |                |        |       |       |                 |        |        |        |                  |        |        |       |                  |        |        |        |
| PIT-232      | Fuel Gas Pressure               | In.WC  | 3.90           | 11.02  | 4.46  | 1.73  | 4.54            | 13.69  | 11.46  | 1.15   | 10.92            | 12.49  | 12.13  | 0.19  | 3.70             | 10.92  | 7.76   | 1.58   |
| FIT-231      | Fuel Gas Flow                   | CFH    | -0.58          | 108.08 | 5.97  | 23.79 | -0.60           | 400.00 | 116.48 | 52.14  | 79.63            | 174.55 | 145.15 | 13.12 | -0.90            | 79.63  | -0.38  | 5.30   |
| PIT-222      | Combustion Air Pressure         | In.WC  | 23.50          | 24.92  | 23.63 | 0.34  | 23.43           | 24.95  | 24.82  | 0.15   | 24.50            | 24.92  | 24.74  | 0.09  | 18.11            | 24.50  | 19.06  | 1.73   |
| FIT-221      | Combustion Air Flow             | CFH    | 10569          | 12467  | 12308 | 450   | 10066           | 12177  | 10426  | 322    | 10123            | 10452  | 10173  | 30    | 10452            | 16663  | 15896  | 1528   |
| PIT-158      | Chamber Pressure (Draft)        | In.WC  | -0.45          | -0.21  | -0.33 | 0.05  | -0.52           | -0.12  | -0.23  | 0.03   | -0.24            | -0.20  | -0.21  | 0.01  | -0.76            | 0.0    | -0.30  | 0.25   |
| TIT-201      | Recorder Temperature            | Deg.F  | 41.63          | 62.55  | 42.73 | 4.27  | 62.55           | 711.38 | 401.35 | 179.30 | 644.70           | 683.70 | 667.24 | 8.38  | 73.73            | 644.70 | 224.45 | 121.83 |
| TIT-202      | Furnace Exit Gas Temp (Control) | Deg.F  | 41.70          | 62.78  | 42.93 | 4.27  | 62.78           | 719.70 | 406.53 | 182.53 | 651.60           | 694.05 | 675.81 | 9.46  | 73.20            | 651.60 | 223.22 | 121.17 |
| TIT-203      | Material Thermocouple #1        | Deg.F  | 42.60          | 62.33  | 43.77 | 4.00  | 62.33           | 673.7  | 369.50 | 170.80 | 603.00           | 652.20 | 631.74 | 10.88 | 69.45            | 615.75 | 254.33 | 146.02 |
| TIT-204      | Material Thermocouple #2        | Deg.F  | 42.00          | 46.95  | 42.43 | 0.97  | 46.95           | 536.03 | 284.71 | 129.66 | 536.03           | 568.73 | 555.22 | 7.80  | 66.08            | 558.23 | 270.24 | 104.37 |
| TIT-205      | Material Thermocouple #3        | Deg.F  | 42.45          | 47.25  | 42.78 | 0.96  | 47.25           | 514.73 | 258.87 | 132.68 | 514.73           | 615.75 | 585.65 | 28.37 | 65.55            | 615.23 | 312.97 | 149.60 |
| TIT-206      | Material Thermocouple #4        | Deg.F  | 42.23          | 66.38  | 43.61 | 4.95  | 66.38           | 579.23 | 328.70 | 152.05 | 559.13           | 587.25 | 575.23 | 6.96  | 63.90            | 559.13 | 216.88 | 116.35 |
| TIT-207      | Material Thermocouple #5        | Deg.F  | 42.83          | 70.43  | 44.22 | 5.61  | 70.43           | 830.40 | 437.30 | 194.14 | 674.55           | 735.08 | 710.59 | 11.86 | 64.80            | 674.55 | 213.05 | 129.13 |
| EXTERNBURNER |                                 |        |                |        |       |       |                 |        |        |        |                  |        |        |       |                  |        |        |        |
| TIT-131      | Combustor Burner Temp. Control  | Deg. F | 1797           | 1828   | 1817  | 11    | 1797            | 1850   | 1835   | 11     | 1807             | 1850   | 1833   | 13    | 181              | 1850   | 1203   | 690    |
| FIT-149      | Fumes Flow                      | PPH    | 2165           | 2384   | 2243  | 68    | 2001            | 2501   | 2126   | 66     | 2163             | 2238   | 2194   | 14    | 2188             | 4000   | 3580   | 404    |
| PIT-151      | Fumes Pressure                  | InWC   | 0.44           | 0.60   | 0.51  | 0.06  | 0.28            | 0.57   | 0.34   | 0.03   | 0.32             | 0.35   | 0.33   | 0.01  | 0.35             | 2.47   | 1.76   | 0.50   |
| TIT-145      | Combustor Temperature           | Deg. F | 1802           | 1836   | 1823  | 12    | 1802            | 1882   | 1840   | 14     | 1808             | 1875   | 1839   | 17    | 152              | 1879   | 1183   | 711    |
| PIT-153      | Fuel Pressure                   | PSIG   | 0.82           | 0.84   | 0.82  | 0.01  | 0.42            | 0.84   | 0.53   | 0.10   | 0.30             | 0.45   | 0.36   | 0.03  | 0.00             | 0.85   | 0.44   | 0.40   |
| FIT-121      | Fuel Gas Flow                   | CFH    | 1091           | 1100   | 1092  | 3     | 606             | 1100   | 758    | 119    | 479              | 656    | 581    | 49    | 1                | 1097   | 569    | 530    |
| CEM          |                                 |        |                |        |       |       |                 |        |        |        |                  |        |        |       |                  |        |        |        |
| NOx-B        | Interconnecting Duct NOx        | ppm    | 1.13           | 1.20   | 1.15  | 0.02  | 1.15            | 51.08  | 2.85   | 3.40   | 2.78             | 3.83   | 3.20   | 0.22  | 1.00             | 2.78   | 1.11   | 0.17   |
| THC-B        | Interconnecting Duct THC        | ppm    | 3.47           | 100.00 | 7.44  | 19.47 | 5.94            | 100.00 | 48.25  | 17.69  | 25.29            | 31.96  | 27.35  | 0.84  | 3.14             | 42.72  | 4.32   | 3.72   |
| CO           | Stack's CO                      | ppm    | 0.00           | 0.00   | 0.00  | 0.00  | -0.50           | 0.50   | -0.01  | 0.11   | -0.50            | 0.50   | -0.02  | 0.18  | -0.50            | 24.50  | 0.51   | 1.86   |
| THC          | Stack's THC                     | ppm    | -0.16          | -0.02  | -0.11 | 0.03  | -0.3            | 0.06   | -0.20  | 0.04   | -0.27            | 0.14   | -0.23  | 0.04  | -0.24            | 29.42  | 0.72   | 2.45   |
| NOx          | Stack's NOx                     | ppm    | 50.75          | 58.08  | 55.18 | 3.08  | 40.08           | 102.50 | 52.24  | 7.35   | 43.25            | 58.18  | 49.81  | 3.89  | -0.98            | 81.23  | 26.30  | 25.26  |
| SO2          | Stack SO2                       | ppm    | 1.50           | 2.00   | 1.54  | 0.14  | 1.50            | 2.00   | 1.85   | 0.23   | 1.50             | 2.50   | 2.01   | 0.09  | 1.50             | 2.50   | 2.00   | 0.08   |
| O2           | Stack's O2                      | %      | 10.33          | 10.80  | 10.49 | 0.20  | 6.60            | 11.18  | 9.59   | 0.51   | 8.43             | 10.88  | 9.71   | 0.49  | 9.90             | 18.40  | 14.77  | 3.21   |
| CO2          | Stack's CO2                     | %      | 5.50           | 5.86   | 5.73  | 0.15  | 5.16            | 8.66   | 6.35   | 0.35   | 5.40             | 7.16   | 6.24   | 0.35  | 0.06             | 6.1    | 2.59   | 2.27   |
| TIT-300      | Ambient Temp                    | Deg. F | 37.40          | 37.94  | 37.77 | 0.14  | 37.76           | 44.06  | 39.74  | 1.23   | 40.46            | 44.78  | 42.35  | 0.95  | 41.72            | 44.8   | 42.94  | 0.57   |



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## APPENDIX H

### SOURCE EMISSIONS DATA SUMMARY SHEETS FOR TEST RUNS 1-3

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**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF CEM PARAMETERS**

| Test Run No. | Test Date        | Test Period | Furnace Outlet Duct   |                       |                       | Afterburner Discharge Stack |                   |                       |                   |                       |                       |
|--------------|------------------|-------------|-----------------------|-----------------------|-----------------------|-----------------------------|-------------------|-----------------------|-------------------|-----------------------|-----------------------|
|              |                  |             | NO <sub>x</sub>       |                       |                       | THC <sup>(1)</sup>          |                   | NO <sub>x</sub>       |                   | THC <sup>(1)</sup>    |                       |
|              |                  |             | Concentration (ppm/v) | Mass Rate (lb/hr)     | Concentration (ppm/v) | Concentration (ppm/v)       | Mass Rate (lb/hr) | Concentration (ppm/v) | Mass Rate (lb/hr) | Concentration (ppm/v) | Mass Rate (lb/hr)     |
| T1           | 1/31/96 - 2/1/96 | 1831-0122   | <1.0                  | <4.9x10 <sup>-3</sup> | 12.6                  | 0.059                       | 0.27              | 35.4                  | 0.27              | <1                    | <7.2x10 <sup>-3</sup> |
| T2           | 2/2/96           | 1404-2043   | 1.9                   | 7.8x10 <sup>-3</sup>  | 50.7                  | 0.19                        | 0.44              | 59.6                  | 0.44              | <1                    | <6.8x10 <sup>-3</sup> |
| T3           | 2/4/96           | 1408-2049   | 4.2                   | 1.6x10 <sup>-2</sup>  | 79.7                  | 0.29                        | 0.43              | 63.3                  | 0.43              | 1.3                   | 8.6x10 <sup>-3</sup>  |
|              |                  |             |                       |                       |                       |                             |                   |                       |                   | 1.0                   | 0.009                 |

(1) Total hydrocarbon concentrations and mass rates are calculated on a dry basis (as propane).

(2) Mass rates calculated using volumetric airflows measured on the isokinetic sampling trains.

| Explosive Removal Efficiency (%) | Overall Hot Gas System Removal Efficiency <sup>(1)</sup> |                         |                         | Afterburner Removal Efficiency <sup>(2)</sup> |                                     |                                     |
|----------------------------------|----------------------------------------------------------|-------------------------|-------------------------|-----------------------------------------------|-------------------------------------|-------------------------------------|
|                                  | Test Run #1.<br>31 Jan 96                                | Test Run #2<br>2 Feb 96 | Test Run #3<br>4 Feb 96 | Test Run 1<br>31 Jan 96<br>1832-0122          | Test Run 2<br>2 Feb 96<br>1405-2100 | Test Run 3<br>4 Feb 96<br>1406-2036 |
| 2,4,6 - Trinitrotoluene (TNT)    | > 99.997                                                 | > 99.95                 | > 99.94                 | > 99.97                                       | > 99.86                             | > 99.86                             |
| Tetryl                           | > 99.79                                                  | > 99.92                 | > 99.94                 | > 84.91                                       | > 79.09                             | > 67.15                             |
| RDX                              | > 99.88                                                  | > 99.97                 | > 99.91                 | > 98.30                                       | > 99.00                             | > 97.68                             |

(1) Based on total explosives introduced to furnace converted to lb/hr (using total test times) and afterburner discharge mass rate determination for each explosive.

(2) Afterburner removal efficiency based on the following:  $\% RE = \frac{AFT\ IN - AFT\ OUT}{AFT\ IN} \times 100$

NOTES: All removal efficiencies reported as greater than since no explosives were measured above the method detection limit at the afterburner discharge.





**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS  
TRIANGLE LABORATORY SEMI-VOLATILE DATA**

|                  |                              |           |
|------------------|------------------------------|-----------|
| <b>TEST DATA</b> | <b>T1</b>                    | <b>T2</b> |
| Run number       | <b>AFTERBURNER DISCHARGE</b> |           |
| Location         |                              |           |
| Date             | 01-31-96                     | 02-02-96  |
| Time period      | 1834-0110                    | 1406-2031 |

| SEMIVOLATILE ORGANICS CONCENTRATIONS, ug/dscm |     |       |     |        |
|-----------------------------------------------|-----|-------|-----|--------|
| Phenol                                        |     | 0.85  |     | 1.58   |
| Bis (2-chloroethyl) ether                     | ND< | 0.78  | ND< | 0.75   |
| 2-Chlorophenol                                | ND< | 0.47  | ND< | 0.45   |
| 1,3-Dichlorobenzene                           | ND< | 0.40  | ND< | 0.38   |
| 1,4-Dichlorobenzene                           | ND< | 0.38  | ND< | 0.37   |
| Benzyl Alcohol                                |     | 73.49 |     | 300.72 |
| 1,2-Dichlorobenzene                           | ND< | 0.41  | ND< | 0.39   |
| 2-Methylphenol                                | ND< | 0.74  | ND< | 0.72   |
| bis (2-Chloropropyl) ether                    | ND< | 0.80  | ND< | 0.77   |
| 4-Methylphenol                                | ND< | 0.73  | ND< | 0.71   |
| n-Nitroso-di-n-propylamine                    | ND< | 0.98  | ND< | 0.95   |
| Hexachloroethane                              | ND< | 0.79  | ND< | 0.77   |
| Nitrobenzene                                  | ND< | 0.49  | ND< | 0.50   |
| Isophorone                                    | ND< | 0.28  | ND< | 0.28   |
| 2-Nitrophenol                                 | ND< | 0.72  | ND< | 0.73   |
| 2,4-Dimethylphenol                            | ND< | 0.61  | ND< | 0.61   |
| Benzoic acid                                  |     | 9.71  |     | 13.23  |
| Bis (2-chloroethoxy)-methane                  | ND< | 0.61  | ND< | 0.62   |
| 2,4-Dichloroethoxy                            | ND< | 0.52  | ND< | 0.52   |
| 1,2,4-Trichlorobenzene                        | ND< | 0.42  | ND< | 0.42   |
| Naphthalene                                   |     | 0.26  |     | 0.32   |
| 4-Chloroaniline                               | ND< | 0.40  | ND< | 0.40   |
| Hexachlorobutadiene                           | ND< | 0.50  | ND< | 0.51   |
| 4-chloro-3-methylphenol                       | ND< | 0.63  | ND< | 0.64   |
| 2-Methylnaphthalene                           | ND< | 0.24  | ND< | 0.25   |
| Hexachlorocyclopentadiene                     | ND< | 0.45  | ND< | 0.45   |
| 2,4,6-Trichlorophenol                         | ND< | 0.57  | ND< | 0.57   |
| 2,4,5-Trichlorophenol                         | ND< | 0.55  | ND< | 0.55   |
| 2-Chloronaphthalene                           | ND< | 0.23  | ND< | 0.23   |
| 2-Nitroaniline                                | ND< | 0.84  | ND< | 0.84   |
| Dimethylphthalate                             | ND< | 0.19  | ND< | 0.19   |
| Acenaphthylene                                | ND< | 0.15  | ND< | 0.15   |
| 2,6-Dinitrotoluene                            | ND< | 0.80  | ND< | 0.80   |
| 3-Nitroaniline                                | ND< | 0.73  | ND< | 0.73   |
| Acenaphthene                                  | ND< | 0.26  | ND< | 0.26   |
| 2,4-Dinitrophenol                             | ND< | 1.66  | ND< | 1.66   |
| 4-Nitrophenol                                 | ND< | 0.79  | ND< | 0.79   |
| Dibenzofuran                                  | ND< | 0.15  | ND< | 0.15   |
| 2,4-Dinitrotoluene                            | ND< | 0.52  | ND< | 0.52   |
| Diethylphthalate                              |     | 1.51  |     | 0.71   |
| 4-Chlorophenyl-phenyl ether                   | ND< | 0.36  | ND< | 0.36   |
| Fluorene                                      | ND< | 0.20  | ND< | 0.20   |
| 4-Nitroaniline                                | ND< | 0.71  | ND< | 0.72   |
| 4,6-Dinitro-2-methylphenol                    | ND< | 0.90  | ND< | 0.88   |
| n-Nitrosodiphenylamine                        | ND< | 0.29  | ND< | 0.28   |
| 4-Bromophenyl-phenyl ether                    | ND< | 0.42  | ND< | 0.41   |
| Hexachlorobenzene                             | ND< | 0.30  | ND< | 0.29   |
| Pentachlorophenol                             | ND< | 0.52  | ND< | 0.51   |
| Phenanthrene                                  | ND< | 0.11  | ND< | 0.11   |
| Anthracene                                    |     | 0.07  |     | 0.11   |
| Di-n-butylphthalate                           |     | 4.17  |     | 3.02   |
| Fluoranthene                                  | ND< | 0.09  | ND< | 0.08   |
| Pyrene                                        | ND< | 0.06  | ND< | 0.06   |
| Butyl benzylphthalate                         |     | 0.08  |     | 0.10   |
| 3,3'-Dichlorobenzidine                        | ND< | 0.18  | ND< | 0.17   |
| Benzo(a)anthracene                            | ND< | 0.07  | ND< | 0.06   |
| Chrysene                                      | ND< | 0.07  | ND< | 0.07   |
| bis(2-Ethylhexyl)phthalate                    |     | 3.16  |     | 3.56   |
| Di-n-octylphthalate                           | ND< | 0.05  | ND< | 0.06   |
| Benzo(b)fluoranthene                          | ND< | 0.07  | ND< | 0.08   |
| Benzo(k)fluoranthene                          | ND< | 0.07  | ND< | 0.08   |
| Benzo(a)pyrene                                | ND< | 0.07  | ND< | 0.08   |
| Indeno(1,2,3-cd)pyrene                        | ND< | 0.07  | ND< | 0.08   |
| Dibenzo(a,h)anthracene                        | ND< | 0.09  | ND< | 0.10   |
| Benzo(g,h,i)perylene                          | ND< | 0.08  | ND< | 0.09   |

"ND<(....)" = Analyte detection limit value.

ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS  
TRIANGLE LABORATORY SEMI-VOLATILE DATA

| TEST DATA                                     |                       |              |  |
|-----------------------------------------------|-----------------------|--------------|--|
| Run number                                    | T1                    | T2           |  |
| Location                                      | AFTERBURNER DISCHARGE |              |  |
| Date                                          | 01-31-96              | 02-02-96     |  |
| Time period                                   | 1834-0110             | 1406-2031    |  |
| SEMIVOLATILE ORGANICS CONCENTRATIONS, lb/dscf |                       |              |  |
| Phenol                                        | 5.29E-11              | 9.88E-11     |  |
| Bis (2-chloroethyl) ether                     | ND< 4.85E-11          | ND< 4.70E-11 |  |
| 2-Chlorophenol                                | ND< 2.91E-11          | ND< 2.83E-11 |  |
| 1,3-Dichlorobenzene                           | ND< 2.47E-11          | ND< 2.39E-11 |  |
| 1,4-Dichlorobenzene                           | ND< 2.36E-11          | ND< 2.30E-11 |  |
| Benzyl Alcohol                                | 4.59E-09              | 1.88E-08     |  |
| 1,2-Dichlorobenzene                           | ND< 2.53E-11          | ND< 2.46E-11 |  |
| 2-Methylphenol                                | ND< 4.63E-11          | ND< 4.49E-11 |  |
| bis (2-Chloroisopropyl) ether                 | ND< 4.98E-11          | ND< 4.84E-11 |  |
| 4-Methylphenol                                | ND< 4.56E-11          | ND< 4.43E-11 |  |
| n-Nitroso-di-n-propylamine                    | ND< 6.12E-11          | ND< 5.95E-11 |  |
| Hexachloroethane                              | ND< 4.96E-11          | ND< 4.80E-11 |  |
| Nitrobenzene                                  | ND< 3.07E-11          | ND< 3.11E-11 |  |
| Isophorone                                    | ND< 1.72E-11          | ND< 1.75E-11 |  |
| 2-Nitrophenol                                 | ND< 4.49E-11          | ND< 4.54E-11 |  |
| 2,4-Dimethylphenol                            | ND< 3.78E-11          | ND< 3.83E-11 |  |
| Benzoic acid                                  | 6.06E-10              | 8.26E-10     |  |
| Bis (2-chloroethoxy)-methane                  | ND< 3.83E-11          | ND< 3.87E-11 |  |
| 2,4-Dichlorophenol                            | ND< 3.22E-11          | ND< 3.26E-11 |  |
| 1,2,4-Trichlorobenzene                        | ND< 2.62E-11          | ND< 2.65E-11 |  |
| Naphthalene                                   | 1.62E-11              | 2.01E-11     |  |
| 4-Chloroaniline                               | ND< 2.49E-11          | ND< 2.52E-11 |  |
| Hexachlorobutadiene                           | ND< 3.15E-11          | ND< 3.20E-11 |  |
| 4-chloro-3-methylphenol                       | ND< 3.94E-11          | ND< 3.99E-11 |  |
| 2-Methylnaphthalene                           | ND< 1.53E-11          | ND< 1.54E-11 |  |
| Hexachlorocyclopentadiene                     | ND< 2.84E-11          | ND< 2.84E-11 |  |
| 2,4,6-Trichlorophenol                         | ND< 3.54E-11          | ND< 3.54E-11 |  |
| 2,4,5-Trichlorophenol                         | ND< 3.42E-11          | ND< 3.43E-11 |  |
| 2-Chloronaphthalene                           | ND< 1.42E-11          | ND< 1.42E-11 |  |
| 2-Nitroaniline                                | ND< 5.24E-11          | ND< 5.24E-11 |  |
| Dimethylphthalate                             | ND< 1.16E-11          | ND< 1.17E-11 |  |
| Acenaphthylene                                | ND< 9.09E-12          | ND< 9.13E-12 |  |
| 2,6-Dinitrotoluene                            | ND< 5.01E-11          | ND< 5.02E-11 |  |
| 3-Nitroaniline                                | ND< 4.56E-11          | ND< 4.55E-11 |  |
| Acenaphthene                                  | ND< 1.62E-11          | ND< 1.63E-11 |  |
| 2,4-Dinitrophenol                             | ND< 1.03E-10          | ND< 1.04E-10 |  |
| 4-Nitrophenol                                 | ND< 4.91E-11          | ND< 4.92E-11 |  |
| Dibenzofuran                                  | ND< 9.46E-12          | ND< 9.50E-12 |  |
| 2,4-Dinitrotoluene                            | ND< 3.26E-11          | ND< 3.27E-11 |  |
| Diethylphthalate                              | 9.46E-11              | 4.45E-11     |  |
| 4-Chlorophenyl-phenyl ether                   | ND< 2.25E-11          | ND< 2.26E-11 |  |
| Fluorene                                      | ND< 1.24E-11          | ND< 1.23E-11 |  |
| 4-Nitroaniline                                | ND< 4.46E-11          | ND< 4.47E-11 |  |
| 4,6-Dinitro-2-methylphenol                    | ND< 5.64E-11          | ND< 5.48E-11 |  |
| n-Nitrosodiphenylamine                        | ND< 1.82E-11          | ND< 1.76E-11 |  |
| 4-Bromophenyl-phenyl ether                    | ND< 2.61E-11          | ND< 2.54E-11 |  |
| Hexachlorobenzene                             | ND< 1.87E-11          | ND< 1.81E-11 |  |
| Pentachlorophenol                             | ND< 3.26E-11          | ND< 3.17E-11 |  |
| Phenanthrene                                  | ND< 7.15E-12          | ND< 6.91E-12 |  |
| Anthracene                                    | 4.24E-12              | 7.03E-12     |  |
| Di-n-butylphthalate                           | 2.60E-10              | 1.88E-10     |  |
| Fluoranthene                                  | ND< 5.46E-12          | ND< 5.31E-12 |  |
| Pyrene                                        | ND< 4.00E-12          | ND< 3.70E-12 |  |
| Butylbenzylphthalate                          | 4.73E-12              | ND< 6.54E-12 |  |
| 3,3'-Dichlorobenzidine                        | ND< 1.14E-11          | ND< 1.05E-11 |  |
| Benzo(a)anthracene                            | ND< 4.24E-12          | ND< 3.95E-12 |  |
| Chrysene                                      | ND< 4.61E-12          | ND< 4.20E-12 |  |
| bis(2-Ethylhexyl)phthalate                    | 1.97E-10              | 2.22E-10     |  |
| Di-n-octylphthalate                           | ND< 3.03E-12          | ND< 3.45E-12 |  |
| Benzo(b)fluoranthene                          | ND< 4.12E-12          | ND< 4.81E-12 |  |
| Benzo(k)fluoranthene                          | ND< 4.24E-12          | ND< 4.94E-12 |  |
| Benzo(a)pyrene                                | ND< 4.24E-12          | ND< 4.94E-12 |  |
| Indeno(1,2,3-cd)pyrene                        | ND< 4.36E-12          | ND< 4.94E-12 |  |
| Dibenzo(a,h)anthracene                        | ND< 5.82E-12          | ND< 6.54E-12 |  |
| Benzo(g,h,i)perylene                          | ND< 5.09E-12          | ND< 5.80E-12 |  |

"ND<(...)" = Analyte detection limit value.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

**TRIANGLE LABORATORY SEMI-VOLATILE DATA**

| TEST DATA                                     |                       |              |  |
|-----------------------------------------------|-----------------------|--------------|--|
| Run number                                    | T1                    | T2           |  |
| Location                                      | AFTERBURNER DISCHARGE |              |  |
| Date                                          | 01-31-96              | 02-02-96     |  |
| Time period                                   | 1834-0110             | 1406-2031    |  |
| SEMIVOLATILE ORGANICS EMISSION RESULTS, lb/hr |                       |              |  |
| Phenol                                        | 3.50E-06              | 6.29E-06     |  |
| Bis (2-chloroethyl) ether                     | ND< 3.21E-06          | ND< 2.99E-06 |  |
| 2-Chlorophenol                                | ND< 1.93E-06          | ND< 1.80E-06 |  |
| 1,3-Dichlorobenzene                           | ND< 1.64E-06          | ND< 1.52E-06 |  |
| 1,4-Dichlorobenzene                           | ND< 1.57E-06          | ND< 1.46E-06 |  |
| Benzyl Alcohol                                | 3.04E-04              | 1.19E-03     |  |
| 1,2-Dichlorobenzene                           | ND< 1.68E-06          | ND< 1.56E-06 |  |
| 2-Methylphenol                                | ND< 3.07E-06          | ND< 2.86E-06 |  |
| bis (2-Chloroisopropyl) ether                 | ND< 3.30E-06          | ND< 3.08E-06 |  |
| 4-Methylphenol                                | ND< 3.02E-06          | ND< 2.82E-06 |  |
| n-Nitroso-di-n-propylamine                    | ND< 4.05E-06          | ND< 3.78E-06 |  |
| Hexachloroethane                              | ND< 3.28E-06          | ND< 3.05E-06 |  |
| Nitrobenzene                                  | ND< 2.03E-06          | ND< 1.98E-06 |  |
| Isophorone                                    | ND< 1.14E-06          | ND< 1.11E-06 |  |
| 2-Nitrophenol                                 | ND< 2.97E-06          | ND< 2.89E-06 |  |
| 2,4-Dimethylphenol                            | ND< 2.50E-06          | ND< 2.43E-06 |  |
| Benzoic acid                                  | 4.01E-05              | 5.25E-05     |  |
| Bis (2-chloroethoxy)-methane                  | ND< 2.54E-06          | ND< 2.47E-06 |  |
| 2,4-Dichlorophenol                            | ND< 2.13E-06          | ND< 2.07E-06 |  |
| 1,2,4-Trichlorobenzene                        | ND< 1.73E-06          | ND< 1.69E-06 |  |
| Naphthalene                                   | 1.08E-06              | 1.28E-06     |  |
| 4-Chloroaniline                               | ND< 1.65E-06          | ND< 1.60E-06 |  |
| Hexachlorobutadiene                           | ND< 2.09E-06          | ND< 2.03E-06 |  |
| 4-chloro-3-methylphenol                       | ND< 2.61E-06          | ND< 2.54E-06 |  |
| 2-Methylnaphthalene                           | ND< 1.01E-06          | ND< 9.81E-07 |  |
| Hexachlorocyclopentadiene                     | ND< 1.88E-06          | ND< 1.81E-06 |  |
| 2,4,6-Trichlorophenol                         | ND< 2.34E-06          | ND< 2.25E-06 |  |
| 2,4,5-Trichlorophenol                         | ND< 2.26E-06          | ND< 2.18E-06 |  |
| 2-Chloronaphthalene                           | ND< 9.39E-07          | ND< 9.03E-07 |  |
| 2-Nitroaniline                                | ND< 3.47E-06          | ND< 3.34E-06 |  |
| Dimethylphthalate                             | ND< 7.70E-07          | ND< 7.46E-07 |  |
| Acephenanthylene                              | ND< 6.02E-07          | ND< 5.81E-07 |  |
| 2,6-Dinitrotoluene                            | ND< 3.31E-06          | ND< 3.20E-06 |  |
| 3-Nitroaniline                                | ND< 3.02E-06          | ND< 2.90E-06 |  |
| Acephenanthrene                               | ND< 1.08E-06          | ND< 1.04E-06 |  |
| 2,4-Dinitrophenol                             | ND< 6.85E-06          | ND< 6.59E-06 |  |
| 4-Nitrophenol                                 | ND< 3.25E-06          | ND< 3.13E-06 |  |
| Dibenzofuran                                  | ND< 6.26E-07          | ND< 6.05E-07 |  |
| 2,4-Dinitrotoluene                            | ND< 2.16E-06          | ND< 2.08E-06 |  |
| Diethylphthalate                              | 6.26E-06              | 2.83E-06     |  |
| 4-Chlorophenyl-phenyl ether                   | ND< 1.49E-06          | ND< 1.44E-06 |  |
| Fluorene                                      | ND< 8.19E-07          | ND< 7.85E-07 |  |
| 4-Nitroaniline                                | ND< 2.95E-06          | ND< 2.84E-06 |  |
| 4,6-Dinitro-2-methylphenol                    | ND< 3.73E-06          | ND< 3.49E-06 |  |
| n-Nitrosodiphenylamine                        | ND< 1.20E-06          | ND< 1.12E-06 |  |
| 4-Bromophenyl-phenyl ether                    | ND< 1.73E-06          | ND< 1.62E-06 |  |
| Hexachlorobenzene                             | ND< 1.24E-06          | ND< 1.15E-06 |  |
| Pentachlorophenol                             | ND< 2.16E-06          | ND< 2.02E-06 |  |
| Phenanthrene                                  | ND< 4.74E-07          | ND< 4.40E-07 |  |
| Anthracene                                    | 2.81E-07              | ND< 4.48E-07 |  |
| Di-n-butylphthalate                           | 1.72E-05              | 1.20E-05     |  |
| Fluoranthene                                  | ND< 3.61E-07          | ND< 3.38E-07 |  |
| Pyrene                                        | ND< 2.65E-07          | ND< 2.36E-07 |  |
| Butylbenzylphthalate                          | 3.13E-07              | ND< 4.16E-07 |  |
| 3,3'-Dichlorobenzidine                        | ND< 7.54E-07          | ND< 6.67E-07 |  |
| Benzo(a)anthracene                            | ND< 2.81E-07          | ND< 2.51E-07 |  |
| Chrysene                                      | ND< 3.05E-07          | ND< 2.67E-07 |  |
| bis(2-Ethylhexyl)phthalate                    | 1.31E-05              | 1.41E-05     |  |
| Di-n-octylphthalate                           | ND< 2.01E-07          | ND< 2.20E-07 |  |
| Benzo(b)fluoranthene                          | ND< 2.73E-07          | ND< 3.06E-07 |  |
| Benzo(k)fluoranthene                          | ND< 2.81E-07          | ND< 3.14E-07 |  |
| Benzo(a)pyrene                                | ND< 2.81E-07          | ND< 3.14E-07 |  |
| Indeno(1,2,3-cd)pyrene                        | ND< 2.89E-07          | ND< 3.14E-07 |  |
| Dibenzo(a,h)anthracene                        | ND< 3.85E-07          | ND< 4.16E-07 |  |
| Benzo(g,h,i)perylene                          | ND< 3.37E-07          | ND< 3.69E-07 |  |

"ND<(...)" = Analyte detection limit value.



**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

**TRIANGLE LABORATORY SEMI-VOLATILE DATA**

**TEST DATA**

|             |                       |           |
|-------------|-----------------------|-----------|
| Run number  | T1                    | T2        |
| Location    | AFTERBURNER DISCHARGE |           |
| Date        | 01-31-96              | 02-02-96  |
| Time period | 1834-0110             | 1406-2031 |

**SEMIVOLATILE ORGANICS EMISSION RESULTS, g/sec**

|                               |          |          |
|-------------------------------|----------|----------|
| Phenol                        | 4.41E-07 | 7.92E-07 |
| Bis (2-chloroethyl) ether     | ND<      | 4.04E-07 |
| 2-Chlorophenol                | ND<      | 2.43E-07 |
| 1,3-Dichlorobenzene           | ND<      | 2.06E-07 |
| 1,4-Dichlorobenzene           | ND<      | 1.97E-07 |
| Benzyl Alcohol                | 3.83E-05 | 1.51E-04 |
| 1,2-Dichlorobenzene           | ND<      | 2.11E-07 |
| 2-Methylphenol                | ND<      | 3.86E-07 |
| bis (2-Chloroisopropyl) ether | ND<      | 4.16E-07 |
| 4-Methylphenol                | ND<      | 3.80E-07 |
| n-Nitroso-di-n-propylamine    | ND<      | 5.11E-07 |
| Hexachloroethane              | ND<      | 4.14E-07 |
| Nitrobenzene                  | ND<      | 2.56E-07 |
| Isophorone                    | ND<      | 1.44E-07 |
| 2-Nitrophenol                 | ND<      | 3.74E-07 |
| 2,4-Dimethylphenol            | ND<      | 3.16E-07 |
| Benzoic acid                  | 5.06E-06 | 6.62E-06 |
| Bis (2-chloroethoxy)-methane  | ND<      | 3.20E-07 |
| 2,4-Dichlorophenol            | ND<      | 2.69E-07 |
| 1,2,4-Trichlorobenzene        | ND<      | 2.18E-07 |
| Naphthalene                   | 1.36E-07 | 1.61E-07 |
| 4-Chloroaniline               | ND<      | 2.07E-07 |
| Hexachlorobutadiene           | ND<      | 2.63E-07 |
| 4-chloro-3-methylphenol       | ND<      | 3.29E-07 |
| 2-Methylnaphthalene           | ND<      | 1.27E-07 |
| Hexachlorocyclopentadiene     | ND<      | 2.37E-07 |
| 2,4,6-Trichlorophenol         | ND<      | 2.95E-07 |
| 2,4,5-Trichlorophenol         | ND<      | 2.85E-07 |
| 2-Chloronaphthalene           | ND<      | 1.18E-07 |
| 2-Nitroaniline                | ND<      | 4.37E-07 |
| Dimethylphthalate             | ND<      | 9.71E-08 |
| Acenaphthylene                | ND<      | 7.58E-08 |
| 2,6-Dinitrotoluene            | ND<      | 4.18E-07 |
| 3-Nitroaniline                | ND<      | 3.80E-07 |
| Acenaphthene                  | ND<      | 1.36E-07 |
| 2,4-Dinitrophenol             | ND<      | 8.63E-07 |
| 4-Nitrophenol                 | ND<      | 4.10E-07 |
| Dibenzofuran                  | ND<      | 7.89E-08 |
| 2,4-Dinitrotoluene            | ND<      | 2.72E-07 |
| Diethylphthalate              | 7.89E-07 | 3.57E-07 |
| 4-Chlorophenyl-phenyl ether   | ND<      | 1.88E-07 |
| Fluorene                      | ND<      | 1.03E-07 |
| 4-Nitroaniline                | ND<      | 3.72E-07 |
| 4,6-Dinitro-2-methylphenol    | ND<      | 4.70E-07 |
| n-Nitrosodiphenylamine        | ND<      | 1.52E-07 |
| 4-Bromophenyl-phenyl ether    | ND<      | 2.17E-07 |
| Hexachlorobenzene             | ND<      | 1.56E-07 |
| Pentachlorophenol             | ND<      | 2.72E-07 |
| Phenanthrene                  | ND<      | 5.97E-08 |
| Anthracene                    | 3.54E-08 | 5.64E-08 |
| Di-n-butylphthalate           | 2.17E-06 | 1.51E-06 |
| Fluoranthene                  | ND<      | 4.55E-08 |
| Pyrene                        | ND<      | 3.34E-08 |
| Burylbenzylphthalate          | 3.94E-08 | 5.24E-08 |
| 3,3'-Dichlorobenzidine        | ND<      | 9.51E-08 |
| Benzo(a)anthracene            | ND<      | 3.54E-08 |
| Chrysene                      | ND<      | 3.84E-08 |
| bis(2-Ethylhexyl)phthalate    | 1.65E-06 | 1.78E-06 |
| Di-n-octylphthalate           | ND<      | 2.53E-08 |
| Benzo(b)fluoranthene          | ND<      | 3.44E-08 |
| Benzo(k)fluoranthene          | ND<      | 3.54E-08 |
| Benzo(a)pyrene                | ND<      | 3.54E-08 |
| Indeno(1,2,3-cd)pyrene        | ND<      | 3.64E-08 |
| Dibenzo(a,h)anthracene        | ND<      | 4.85E-08 |
| Benzo(g,h,i)perylene          | ND<      | 4.25E-08 |

"ND<(....)" = Analyte detection limit value.

### TRIANGLE LABORATORY SEMI-VOLATILE DATA

| Run number  | T1                    | T2        | FIELD BLANK |
|-------------|-----------------------|-----------|-------------|
| Location    | AFTERBURNER DISCHARGE |           |             |
| Date        | 01-31-96              | 02-02-96  | 02-04-96    |
| Time period | 1834-0110             | 1406-2031 |             |

| Chemical                         | Count | Count | Count |
|----------------------------------|-------|-------|-------|
| Benzaldehyde                     | 1091  | 2749  | 4835  |
| Methyl Ester Benzoic Acid        | ND    | ND    | 60    |
| Alkylbenzene                     | ND    | 9     | ND    |
| Substituted Benzene              | ND    | 403   | 1757  |
| Substituted Benzaldehyde         | 12    | 18    | 10    |
| Substituted Alkane               | 55    | ND    | ND    |
| Triacetin                        | 103   | ND    | 330   |
| Alkyl Methyl Ester Benzoic Acid  | ND    | 10    | 12    |
| Aromatic Ketone                  | 12    | 16    | 9     |
| Bibenzyl                         | 55    | 207   | 56    |
| Benzophenone                     | 9     | 18    | 11    |
| Substituted Amide                | 21    | 20    | ND    |
| Alkyl Acid                       | ND    | ND    | 21    |
| Substituted Aromatic Hydrocarbon | ND    | ND    | 100   |

| SEMIVOLATILE ORGANICS CONCENTRATIONS, ug/g soil |        |        |
|-------------------------------------------------|--------|--------|
| Benzaldehyde                                    | 211.83 | 543.29 |
| Methyl Ester Benzoic Acid                       | ND     | ND     |
| Alkyl benzene                                   | ND     | 1.78   |
| Substituted Benzene                             | ND     | 79.65  |
| Substituted Benzaldehyde                        | 2.33   | 3.56   |
| Substituted Alkane                              | 10.68  | ND     |
| Triacetin                                       | 20.00  | ND     |
| Alkyl Methyl Ester Benzoic Acid                 | ND     | 1.98   |
| Aromatic Ketone                                 | 2.33   | 3.16   |
| Bibenzyl                                        | 10.68  | 40.91  |
| Benzophenone                                    | 1.75   | 3.56   |
| Substituted Amide                               | 4.08   | 3.95   |
| Alkyl Acid                                      | ND     | ND     |
| Substituted Aromatic Hydrocarbon                | ND     | ND     |

| ENVIRONMENTAL ORGANICS CONCENTRATIONS, mg/L |          |          |
|---------------------------------------------|----------|----------|
| Benzaldehyde                                | 1.32E-08 | 3.39E-08 |
| Methyl Ester Benzoic Acid                   | ND       | ND       |
| Alkylbenzene                                | ND       | 1.11E+00 |
| Substituted Benzene                         | ND       | 4.97E-09 |
| Substituted Benzaldehyde                    | 1.45E+00 | 2.22E+00 |
| Substituted Alkane                          | 6.67E+00 | ND       |
| Triacetin                                   | 1.25E-09 | ND       |
| Alkyl Methyl Ester Benzoic Acid             | ND       | 1.23E+00 |
| Aromatic Ketone                             | 1.45E+00 | 1.97E+00 |
| Bibenzyl                                    | 6.67E+00 | 2.55E-09 |
| Benzophenone                                | 1.09E+00 | 2.22E+00 |
| Substituted Amide                           | 2.55E+00 | 2.47E+00 |
| Alkyl Acid                                  | ND       | ND       |
| Substituted Aromatic Hydrocarbon            | ND       | ND       |

| VOLATILE ORGANICS EMISSION RESULTS, 10/01 |          |          |
|-------------------------------------------|----------|----------|
| Benzaldehyde                              | 8.76E-04 | 2.16E-03 |
| Methyl Ester Benzoic Acid                 | ND       | ND       |
| Alkylbenzene                              | ND       | 7.07E-06 |
| Substituted Benzene                       | ND       | 3.16E-04 |
| Substituted Benzaldehyde                  | 9.63E-06 | 1.41E-05 |
| Substituted Alkane                        | 4.41E-05 | ND       |
| Triacetin                                 | 8.27E-05 | ND       |
| Alkyl Methyl Ester Benzoic Acid           | ND       | 7.85E-06 |
| Aromatic Ketone                           | 9.63E-06 | 1.26E-05 |
| Bibenzyl                                  | 4.41E-05 | 1.63E-04 |
| Benzophenone                              | 7.22E-06 | 1.41E-05 |
| Substituted Amide                         | 1.69E-05 | 1.57E-05 |
| Alkyl Acid                                | ND       | ND       |
| Substituted Aromatic Hydrocarbon          | ND       | ND       |

| VOLATILE ORGANICS ELUTION RESULTS, <i>gac</i> |          |          |
|-----------------------------------------------|----------|----------|
| Benzaldehyde                                  | 1.10E-04 | 2.72E-04 |
| Methyl Ester Benzoic Acid                     | ND       | ND       |
| Alkylbenzene                                  | ND       | 8.90E-07 |
| Substituted Benzene                           | ND       | 3.99E-05 |
| Substituted Benzaldehyde                      | 1.21E-06 | 1.78E-06 |
| Substituted Alkane                            | 5.56E-06 | ND       |
| Triacetin                                     | 1.04E-05 | ND       |
| Alkyl Methyl Ester Benzoic Acid               | ND       | 9.89E-07 |
| Aromatic Ketone                               | 1.21E-06 | 1.58E-06 |
| Bibenzyl                                      | 5.56E-06 | 2.05E-05 |
| Benzophenone                                  | 9.10E-07 | 1.78E-06 |
| Substituted Amide                             | 2.12E-06 | 1.98E-06 |
| Alkyl Acid                                    | ND       | ND       |
| Substituted Aromatic Hydrocarbon              | ND       | ND       |

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**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF PARTICULATE, HCl AND Cl<sub>2</sub> TEST DATA AND TEST RESULTS**

**TEST DATA**

|                  | T1        | T2        | T3        |
|------------------|-----------|-----------|-----------|
| Test run number  |           |           |           |
| Test location    |           |           |           |
| Test date        | 01-31-96  | 02-02-96  | 02-04-96  |
| Test time period | 1834-0103 | 1407-2011 | 1408-2026 |

**AFTERBURNER DISCHARGE**

**SAMPLING DATA**

|                                                   |          |          |          |
|---------------------------------------------------|----------|----------|----------|
| Sampling duration, min.                           | 320.0    | 320.0    | 320.0    |
| Nozzle diameter, in.                              | 0.620    | 0.620    | 0.620    |
| Cross sectional nozzle area, sq.ft.               | 0.002097 | 0.002097 | 0.002097 |
| Barometric pressure, in. Hg                       | 29.73    | 29.59    | 30.28    |
| Avg. orifice press. diff., in H <sub>2</sub> O    | 0.71     | 0.69     | 0.56     |
| Avg. dry gas meter temp., deg F                   | 56       | 49       | 44       |
| Avg. abs. dry gas meter temp., deg. R             | 516      | 509      | 504      |
| Total liquid collected by train, ml               | 294.0    | 285.1    | 244.9    |
| Std. vol. of H <sub>2</sub> O vapor coll., cu.ft. | 13.8     | 13.4     | 11.5     |
| Dry gas meter calibration factor                  | 1.0020   | 1.0020   | 1.0020   |
| Sample vol. at meter cond., dcf                   | 146.538  | 145.049  | 128.758  |
| Sample vol. at std. cond., dscf (1)               | 149.429  | 149.381  | 136.963  |
| Percent of isokinetic sampling                    | 103.0    | 105.0    | 103.7    |

**STACK GAS STREAM COMPOSITION DATA**

|                                                     |       |       |       |
|-----------------------------------------------------|-------|-------|-------|
| CO <sub>2</sub> , % by volume, dry basis            | 5.7   | 5.8   | 6.1   |
| O <sub>2</sub> , % by volume, dry basis             | 12.1  | 11.9  | 11.9  |
| CO, % by volume, dry basis                          | 0.0   | 0.0   | 0.0   |
| N <sub>2</sub> , % by volume, dry basis             | 82.2  | 82.3  | 82.0  |
| Molecular wt. of dry gas, lb/lb mole                | 29.4  | 29.4  | 29.5  |
| H <sub>2</sub> O vapor in gas stream, prop. by vol. | 0.085 | 0.082 | 0.078 |
| Mole fraction of dry gas                            | 0.915 | 0.918 | 0.922 |
| Molecular wt. of wet gas, lb/lb mole                | 28.4  | 28.5  | 28.6  |

**GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA**

|                                            |        |        |        |
|--------------------------------------------|--------|--------|--------|
| Static pressure, in. H <sub>2</sub> O      | -0.10  | -0.10  | -0.10  |
| Static pressure, in. Hg                    | -0.007 | -0.007 | -0.007 |
| Absolute pressure, in. Hg                  | 29.72  | 29.58  | 30.27  |
| Avg. temperature, deg. F                   | 1675   | 1655   | 1643   |
| Avg. absolute temperature, deg.R           | 2135   | 2115   | 2103   |
| Pitot tube coefficient                     | 0.84   | 0.84   | 0.84   |
| Total number of traverse points            | 16     | 16     | 16     |
| Avg. gas stream velocity, ft./sec.         | 16.0   | 15.6   | 14.0   |
| Stack/duct cross sectional area, sq.ft.    | 4.59   | 4.59   | 4.59   |
| Avg. gas stream volumetric flow, wacf/min. | 4410   | 4300   | 3860   |
| Avg. gas stream volumetric flow, dscf/min. | 990    | 970    | 900    |

**LABORATORY REPORT DATA**

|                            |        |        |        |
|----------------------------|--------|--------|--------|
| Total Particulate, g       | 0.0028 | 0.0014 | 0.0038 |
| Total HCl, mg              | 2.016  | 1.738  | 1.608  |
| Total Cl <sub>2</sub> , mg | 0.234  | 1.216  | 1.242  |

**PARTICULATE EMISSIONS**

|                                              |          |          |          |
|----------------------------------------------|----------|----------|----------|
| Concentration, gr/dscf                       | 2.89E-04 | 1.45E-04 | 4.28E-04 |
| Concentration, gr/dscf @ 7% O <sub>2</sub>   | 4.52E-04 | 2.22E-04 | 6.56E-04 |
| Concentration, gr/dscf @ 12% CO <sub>2</sub> | 6.05E-04 | 2.98E-04 | 8.41E-04 |
| Mass rate, lbs/hr                            | 0.002    | 0.001    | 0.003    |

**HCl EMISSIONS**

|                         |          |          |          |
|-------------------------|----------|----------|----------|
| Concentration, lbs/dscf | 2.97E-08 | 2.56E-08 | 2.59E-08 |
| Concentration, ppm/v    | 0.31     | 0.27     | 0.27     |
| Mass rate, lbs/hr       | 1.77E-03 | 1.50E-03 | 1.40E-03 |

**Cl<sub>2</sub> EMISSIONS**

|                         |          |          |          |
|-------------------------|----------|----------|----------|
| Concentration, lbs/dscf | 3.45E-09 | 1.79E-08 | 2.00E-08 |
| Concentration, ppm/v    | 0.019    | 0.098    | 0.109    |
| Mass rate, lbs/hr       | 2.06E-04 | 1.05E-03 | 1.08E-03 |

(1) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mmHg)

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF EXPLOSIVE COMPOUNDS TEST DATA AND TEST RESULTS**

| <b>TEST DATA</b>                                    | <b>T1</b> | <b>T1 (MID-SOAK)</b>     | <b>T2</b> | <b>T3</b> |
|-----------------------------------------------------|-----------|--------------------------|-----------|-----------|
| Run number                                          |           |                          |           |           |
| Location                                            |           |                          |           |           |
| Date                                                | 01-31-96  | 02-01-96                 | 02-02-96  | 02-04-96  |
| Time period                                         | 1832-0122 | 0644-1005                | 1405-2100 | 1406-2106 |
|                                                     |           | <b>FURNACE DISCHARGE</b> |           |           |
| <b>SAMPLING DATA</b>                                |           |                          |           |           |
| Sampling duration, min.                             | 410.0     | 180.0                    | 415.0     | 420.0     |
| Nozzle diameter, in.                                | 0.311     | 0.311                    | 0.275     | 0.275     |
| Cross sectional nozzle area, sq.ft.                 | 0.000528  | 0.000528                 | 0.000412  | 0.000412  |
| Barometric pressure, in. Hg                         | 29.73     | 29.76                    | 29.59     | 30.28     |
| Avg. orifice press. diff., in H <sub>2</sub> O      | 1.85      | 1.17                     | 0.77      | 0.69      |
| Avg. dry gas meter temp., deg F                     | 57        | 59                       | 45        | 40        |
| Avg. abs. dry gas meter temp., deg. R               | 517       | 519                      | 505       | 500       |
| Total liquid collected by train, ml                 | 187.7     | 67.5                     | 108.8     | 106.6     |
| Std. vol. of H <sub>2</sub> O vapor coll., cu.ft.   | 8.8       | 3.2                      | 5.1       | 5.0       |
| Dry gas meter calibration factor                    | 1.0060    | 1.0060                   | 1.0060    | 1.0060    |
| Sample vol. at meter cond., dcf                     | 288.854   | 104.276                  | 194.617   | 179.138   |
| Sample vol. at std. cond., dscf (1)                 | 296.360   | 106.493                  | 202.829   | 192.896   |
| Percent of isokinetic sampling                      | 99.7      | 101.4                    | 102.5     | 101.0     |
| <b>GAS STREAM COMPOSITION DATA</b>                  |           |                          |           |           |
| CO <sub>2</sub> , % by volume, dry basis            | 1.3       | 1.5                      | 0.2       | 1.5       |
| O <sub>2</sub> , % by volume, dry basis             | 19.8      | 19.3                     | 19.1      | 19.4      |
| CO, % by volume dry basis                           | 0.0       | 0.0                      | 0.0       | 0.0       |
| N <sub>2</sub> , % by volume, dry basis             | 79.0      | 79.2                     | 80.7      | 79.1      |
| Molecular wt. of dry gas, lb/lb mole                | 28.99     | 29.01                    | 28.80     | 29.02     |
| H <sub>2</sub> O vapor in gas stream, prop. by vol. | 0.029     | 0.029                    | 0.025     | 0.025     |
| Mole fraction of dry gas                            | 0.971     | 0.971                    | 0.975     | 0.975     |
| Molecular wt. of wet gas, lb/lb mole                | 28.7      | 28.7                     | 28.5      | 28.7      |
| <b>GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA</b> |           |                          |           |           |
| Static pressure, in. H <sub>2</sub> O               | -0.78     | -1.00                    | -0.70     | -0.90     |
| Static pressure, in. Hg                             | -0.057    | -0.074                   | -0.051    | -0.066    |
| Absolute pressure, in. Hg                           | 29.67     | 29.69                    | 29.54     | 30.21     |
| Avg. temperature, deg. F                            | 291       | 475                      | 356       | 403       |
| Avg. absolute temperature, deg.R                    | 751       | 935                      | 816       | 863       |
| Pitot tube coefficient                              | 0.99      | 0.99                     | 0.99      | 0.99      |
| Total number of traverse points                     | 1         | 1                        | 1         | 1         |
| Avg. gas stream velocity, ft./sec.                  | 33.8      | 33.9                     | 31.0      | 30.5      |
| Stack/duct cross sectional area, sq.ft.             | 0.492     | 0.492                    | 0.492     | 0.492     |
| Avg. gas stream volumetric flow, wacf/min.          | 1000      | 1000                     | 910       | 900       |
| Avg. gas stream volumetric flow, dscf/min.          | 680       | 540                      | 570       | 540       |

(1) Standard conditions = 68 °F (20 °C) and 29.92 inches Hg (760 mm Hg)



**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF EXPLOSIVE COMPOUNDS TEST DATA AND TEST RESULTS**

| TEST DATA                             |     | FURNACE DISCHARGE |               |           |           |          |
|---------------------------------------|-----|-------------------|---------------|-----------|-----------|----------|
| Run number                            |     | T1                | T1 (MID-SOAK) | T2        | T3        |          |
| Location                              |     |                   |               |           |           |          |
| Date                                  |     | 01-31-96          | 02-01-96      | 02-02-96  | 02-04-96  |          |
| Time period                           |     | 1832-0122         | 0644-1005     | 1405-2100 | 1406-2106 |          |
| EXPLOSIVES LABORATORY REPORT DATA, ug |     |                   |               |           |           |          |
| HMX                                   | ND< | 462.0             | ND<           | 28.60     | ND<       | 462.0    |
| RDX                                   |     | 1878.0            |               | 1.80      |           | 2880.0   |
| Trinitrobenzene (1,3,5-TNB)           |     | 854.0             |               | 8.00      |           | 579.0    |
| Dinitrobenzene (1,3-DNB)              |     | 14.0              | ND<           | 6.72      |           | 9.4      |
| Nitrobenzene (NB)                     | ND< | 109.2             | ND<           | 6.72      | ND<       | 109.2    |
| Tetryl                                |     | 316.0             | ND<           | 19.40     |           | 205.0    |
| 2,4,6-Trinitrotoluene (TNT)           |     | 56000.0           |               | 151.60    |           | 10420.0  |
| 2,6-Dinitrotoluene (2,6-DNT)          | ND< | 105.0             | ND<           | 6.50      |           | 21.0     |
| 2,4-Dinitrotoluene (2,4-DNT)          |     | 76.0              | ND<           | 6.50      | ND<       | 105.0    |
| EXPLOSIVES CONCENTRATIONS, ug/dscm    |     |                   |               |           |           |          |
| HMX                                   | ND< | 55.0              | ND<           | 9.5       | ND<       | 80.4     |
| RDX                                   |     | 223.8             |               | 0.6       |           | 501.4    |
| Trinitrobenzene (1,3,5-TNB)           |     | 101.8             |               | 2.7       |           | 100.8    |
| Dinitrobenzene (1,3-DNB)              |     | 1.7               | ND<           | 2.2       |           | 1.6      |
| Nitrobenzene (NB)                     | ND< | 13.0              | ND<           | 2.2       | ND<       | 19.0     |
| Tetryl                                |     | 37.7              | ND<           | 6.4       |           | 35.7     |
| 2,4,6-Trinitrotoluene (TNT)           |     | 6672.3            |               | 50.3      |           | 1814.0   |
| 2,6-Dinitrotoluene (2,6-DNT)          | ND< | 12.5              | ND<           | 2.2       |           | 3.7      |
| 2,4-Dinitrotoluene (2,4-DNT)          |     | 9.1               | ND<           | 2.2       | ND<       | 18.3     |
| EXPLOSIVES CONCENTRATIONS, lb/dscf    |     |                   |               |           |           |          |
| HMX                                   | ND< | 3.44E-09          | ND<           | 5.92E-10  | ND<       | 5.02E-09 |
| RDX                                   |     | 1.40E-08          |               | 3.73E-11  |           | 3.13E-08 |
| Trinitrobenzene (1,3,5-TNB)           |     | 6.35E-09          |               | 1.66E-10  |           | 6.29E-09 |
| Dinitrobenzene (1,3-DNB)              |     | 1.04E-10          | ND<           | 1.39E-10  |           | 1.02E-10 |
| Nitrobenzene (NB)                     | ND< | 8.12E-10          | ND<           | 1.39E-10  | ND<       | 1.19E-09 |
| Tetryl                                |     | 2.35E-09          | ND<           | 4.02E-10  |           | 2.23E-09 |
| 2,4,6-Trinitrotoluene (TNT)           |     | 4.17E-07          |               | 3.14E-09  |           | 1.13E-07 |
| 2,6-Dinitrotoluene (2,6-DNT)          | ND< | 7.81E-10          | ND<           | 1.35E-10  |           | 2.28E-10 |
| 2,4-Dinitrotoluene (2,4-DNT)          |     | 5.65E-10          | ND<           | 1.35E-10  | ND<       | 1.14E-09 |

ND<= Analyte detection limit value.

NA = Sample was not analyzed for these compounds.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF EXPLOSIVE COMPOUNDS TEST DATA AND TEST RESULTS**

| TEST DATA                                                    | FURNACE DISCHARGE |          |               |          |           |          |           |          |  |  |
|--------------------------------------------------------------|-------------------|----------|---------------|----------|-----------|----------|-----------|----------|--|--|
| Run number                                                   | T1                |          | T1 (MID-SOAK) |          | T2        |          | T3        |          |  |  |
| Location                                                     |                   |          |               |          |           |          |           |          |  |  |
| Date                                                         | 01-31-96          |          | 02-01-96      |          | 02-02-96  |          | 02-04-96  |          |  |  |
| Time period                                                  | 1832-0122         |          | 0644-1005     |          | 1405-2100 |          | 1406-2106 |          |  |  |
| EXPLOSIVES EMISSION RATES, lb/hr                             |                   |          |               |          |           |          |           |          |  |  |
| HMX                                                          | ND<               | 1.39E-04 | ND<           | 1.93E-05 | ND<       | 1.64E-04 | ND<       | 1.80E-04 |  |  |
| RDX                                                          |                   | 5.67E-04 |               | 1.22E-06 |           | 1.02E-03 |           | 4.56E-04 |  |  |
| Trinitrobenzene (1,3,5-TNB)                                  |                   | 2.58E-04 |               | 5.41E-06 |           | 2.05E-04 |           | 1.88E-04 |  |  |
| Dinitrobenzene (1,3-DNB)                                     |                   | 4.23E-06 | ND<           | 4.54E-06 |           | 3.34E-06 |           | 8.97E-06 |  |  |
| Nitrobenzene (NB)                                            | ND<               | 3.30E-05 | ND<           | 4.54E-06 | ND<       | 3.88E-05 | ND<       | 4.26E-05 |  |  |
| Tetryl                                                       |                   | 9.54E-05 | ND<           | 1.31E-05 |           | 7.27E-05 |           | 4.84E-05 |  |  |
| 2,4,6-Trinitrotoluene (INT)                                  |                   | 1.69E-02 |               | 1.02E-04 |           | 3.70E-03 |           | 3.89E-03 |  |  |
| 2,6-Dinitrotoluene (2,6-DNT)                                 | ND<               | 3.17E-05 | ND<           | 4.39E-06 |           | 7.45E-06 | ND<       | 4.10E-05 |  |  |
| 2,4-Dinitrotoluene (2,4-DNT)                                 |                   | 2.29E-05 | ND<           | 4.39E-06 | ND<       | 3.73E-05 | ND<       | 4.10E-05 |  |  |
| EXPLOSIVES CONCENTRATIONS, ppb/v                             |                   |          |               |          |           |          |           |          |  |  |
| HMX                                                          | ND<               | 4.47     | ND<           | 0.77     | ND<       | 6.53     | ND<       | 6.87     |  |  |
| RDX                                                          |                   | 24.23    |               | 0.06     |           | 54.30    |           | 23.20    |  |  |
| Trinitrobenzene (1,3,5-TNB)                                  |                   | 11.49    |               | 0.30     |           | 11.38    |           | 9.98     |  |  |
| Dinitrobenzene (1,3-DNB)                                     |                   | 0.24     | ND<           | 0.32     |           | 0.23     |           | 0.60     |  |  |
| Nitrobenzene (NB)                                            | ND<               | 2.54     | ND<           | 0.44     | ND<       | 3.72     | ND<       | 3.91     |  |  |
| Tetryl                                                       |                   | 3.16     | ND<           | 0.54     |           | 2.99     |           | 1.90     |  |  |
| 2,4,6-Trinitrotoluene (INT)                                  |                   | 707.18   |               | 5.33     |           | 192.26   |           | 193.24   |  |  |
| 2,6-Dinitrotoluene (2,6-DNT)                                 | ND<               | 1.65     | ND<           | 0.28     |           | 0.48     | ND<       | 2.54     |  |  |
| 2,4-Dinitrotoluene (2,4-DNT)                                 |                   | 1.20     | ND<           | 0.28     | ND<       | 2.41     | ND<       | 2.54     |  |  |
| EXPLOSIVES EMISSION RATES, g/sec                             |                   |          |               |          |           |          |           |          |  |  |
| HMX                                                          | ND<               | 1.76E-05 | ND<           | 2.44E-06 | ND<       | 2.07E-05 | ND<       | 2.27E-05 |  |  |
| RDX                                                          |                   | 7.14E-05 |               | 1.53E-07 |           | 1.29E-04 |           | 5.75E-05 |  |  |
| Trinitrobenzene (1,3,5-TNB)                                  |                   | 3.25E-05 |               | 6.81E-07 |           | 2.59E-05 |           | 2.37E-05 |  |  |
| Dinitrobenzene (1,3-DNB)                                     |                   | 5.32E-07 | ND<           | 5.72E-07 |           | 4.20E-07 |           | 1.13E-06 |  |  |
| Nitrobenzene (NB)                                            | ND<               | 4.15E-06 | ND<           | 5.72E-07 | ND<       | 4.88E-06 | ND<       | 5.37E-06 |  |  |
| Tetryl                                                       |                   | 1.20E-05 | ND<           | 1.65E-06 |           | 9.17E-06 |           | 6.10E-06 |  |  |
| 2,4,6-Trinitrotoluene (INT)                                  |                   | 2.13E-03 |               | 1.29E-05 |           | 4.66E-04 |           | 4.90E-04 |  |  |
| 2,6-Dinitrotoluene (2,6-DNT)                                 | ND<               | 3.99E-06 | ND<           | 5.54E-07 |           | 9.39E-07 | ND<       | 5.16E-06 |  |  |
| 2,4-Dinitrotoluene (2,4-DNT)                                 |                   | 2.89E-06 | ND<           | 5.54E-07 | ND<       | 4.69E-06 | ND<       | 5.16E-06 |  |  |
| SUMMARY OF DIESEL RANGE ORGANICS TEST RESULTS <sup>(1)</sup> |                   |          |               |          |           |          |           |          |  |  |
| Laboratory Report Data, ug                                   |                   | 15400    |               | NA       |           | NA       |           | NA       |  |  |
| Concentration, ug/dscm                                       |                   | 1834.9   |               | NA       |           | NA       |           | NA       |  |  |
| Concentration, lb/dscf                                       |                   | 1.15E-07 |               | NA       |           | NA       |           | NA       |  |  |
| Concentration, ppb/v <sup>(2)</sup>                          |                   | 310.25   |               | NA       |           | NA       |           | NA       |  |  |
| Emission Rate, lb/hr                                         |                   | 4.65E-03 |               | NA       |           | NA       |           | NA       |  |  |
| Emission Rate, g/sec                                         |                   | 5.86E-04 |               | NA       |           | NA       |           | NA       |  |  |

ND< = Analyte detection limit value.

NA = Sample was not analyzed for these compounds.

(1) The diesel range organic analysis was performed on T1 sample only.

(2) The reported ppb/v concentrations for these compounds is calculated using the molecular weight of decane.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF EXPLOSIVE COMPOUNDS TEST DATA AND TEST RESULTS**

**TEST DATA**

|             | T1        | T2                           | T3        |
|-------------|-----------|------------------------------|-----------|
| Run number  |           | <b>AFTERBURNER DISCHARGE</b> |           |
| Location    |           |                              |           |
| Date        | 01-31-96  | 02-02-96                     | 02-04-96  |
| Time period | 1834-0110 | 1406-2031                    | 1409-2036 |

**SAMPLING DATA**

|                                                   |          |          |          |
|---------------------------------------------------|----------|----------|----------|
| Sampling duration, min.                           | 360.0    | 360.0    | 360.0    |
| Nozzle diameter, in.                              | 0.622    | 0.622    | 0.622    |
| Cross sectional nozzle area, sq.ft.               | 0.002110 | 0.002110 | 0.002110 |
| Barometric pressure, in. Hg                       | 29.73    | 29.59    | 30.28    |
| Avg. orifice press. diff., in H <sub>2</sub> O    | 0.86     | 0.80     | 0.62     |
| Avg. dry gas meter temp., deg F                   | 53       | 43       | 38       |
| Avg. abs. dry gas meter temp., deg. R             | 513      | 503      | 498      |
| Total liquid collected by train, ml               | 343.2    | 326.0    | 231.4    |
| Std. vol. of H <sub>2</sub> O vapor coll., cu.ft. | 16.2     | 15.3     | 10.9     |
| Dry gas meter calibration factor                  | 1.0050   | 1.0050   | 1.0050   |
| Sample vol. at meter cond., dcf                   | 176.562  | 171.137  | 145.923  |
| Sample vol. at std. cond., dscf (1)               | 181.864  | 178.670  | 157.476  |
| Percent of isokinetic sampling                    | 99.5     | 101.8    | 97.8     |

**GAS STREAM COMPOSITION DATA**

|                                                     |       |       |       |
|-----------------------------------------------------|-------|-------|-------|
| CO <sub>2</sub> , % by volume, dry basis            | 5.7   | 5.8   | 6.1   |
| O <sub>2</sub> , % by volume, dry basis             | 12.1  | 11.9  | 11.9  |
| CO, % by volume dry basis                           | 0.0   | 0.0   | 0.0   |
| N <sub>2</sub> , % by volume, dry basis             | 82.2  | 82.3  | 82.0  |
| Molecular wt. of dry gas, lb/lb mole                | 29.40 | 29.41 | 29.45 |
| H <sub>2</sub> O vapor in gas stream, prop. by vol. | 0.082 | 0.079 | 0.065 |
| Mole fraction of dry gas                            | 0.918 | 0.921 | 0.935 |
| Molecular wt. of wet gas, lb/lb mole                | 28.5  | 28.5  | 28.7  |

**GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA**

|                                            |        |        |        |
|--------------------------------------------|--------|--------|--------|
| Static pressure, in. H <sub>2</sub> O      | -0.10  | -0.10  | -0.10  |
| Static pressure, in. Hg                    | -0.007 | -0.007 | -0.007 |
| Absolute pressure, in. Hg                  | 29.72  | 29.58  | 30.27  |
| Avg. temperature, deg. F                   | 1560   | 1515   | 1510   |
| Avg. absolute temperature, deg.R           | 2020   | 1975   | 1970   |
| Pitot tube coefficient                     | 0.84   | 0.84   | 0.84   |
| Total number of traverse points            | 12     | 12     | 12     |
| Avg. gas stream velocity, ft./sec.         | 16.8   | 15.8   | 13.9   |
| Stack/duct cross sectional area, sq.ft.    | 4.587  | 4.587  | 4.587  |
| Avg. gas stream volumetric flow, wacf/min. | 4630   | 4360   | 3840   |
| Avg. gas stream volumetric flow, dscf/min. | 1100   | 1060   | 970    |

(1) Standard conditions = 68 °F (20 °C) and 29.92 inches Hg (760 mm Hg)

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF EXPLOSIVE COMPOUNDS TEST DATA AND TEST RESULTS**

**TEST DATA**

|             |                              |           |           |
|-------------|------------------------------|-----------|-----------|
| Run number  | T1                           | T2        | T3        |
| Location    | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Time period | 1834-0110                    | 1406-2031 | 1409-2036 |

**EXPLOSIVES LABORATORY REPORT DATA, ug**

|                              |     |       |     |       |     |       |
|------------------------------|-----|-------|-----|-------|-----|-------|
| HMX                          | ND< | 26.40 | ND< | 28.60 | ND< | 28.60 |
| RDX                          | ND< | 12.00 | ND< | 13.00 | ND< | 13.00 |
| Trinitrobenzene (1,3,5-TNB)  | ND< | 6.00  | ND< | 6.50  | ND< | 6.50  |
| Dinitrobenzene (1,3-DNB)     | ND< | 6.24  | ND< | 6.72  | ND< | 6.72  |
| Nitrobenzene (NB)            | ND< | 6.24  | ND< | 6.72  | ND< | 6.72  |
| Tetryl                       | ND< | 18.00 | ND< | 19.40 | ND< | 19.40 |
| 2,4,6-Trinitrotoluene (TNT)  | ND< | 6.00  | ND< | 6.50  | ND< | 6.50  |
| 2,6-Dinitrotoluene (2,6-DNT) | ND< | 6.00  | ND< | 6.50  | ND< | 6.50  |
| 2,4-Dinitrotoluene (2,4-DNT) | ND< | 6.00  | ND< | 6.50  | ND< | 6.50  |

**EXPLOSIVES CONCENTRATIONS, ug/dscm**

|                              |     |      |     |      |     |      |
|------------------------------|-----|------|-----|------|-----|------|
| HMX                          | ND< | 5.13 | ND< | 5.65 | ND< | 6.41 |
| RDX                          | ND< | 2.33 | ND< | 2.57 | ND< | 2.91 |
| Trinitrobenzene (1,3,5-TNB)  | ND< | 1.16 | ND< | 1.28 | ND< | 1.46 |
| Dinitrobenzene (1,3-DNB)     | ND< | 1.21 | ND< | 1.33 | ND< | 1.51 |
| Nitrobenzene (NB)            | ND< | 1.21 | ND< | 1.33 | ND< | 1.51 |
| Tetryl                       | ND< | 3.49 | ND< | 3.83 | ND< | 4.35 |
| 2,4,6-Trinitrotoluene (TNT)  | ND< | 1.16 | ND< | 1.28 | ND< | 1.46 |
| 2,6-Dinitrotoluene (2,6-DNT) | ND< | 1.16 | ND< | 1.28 | ND< | 1.46 |
| 2,4-Dinitrotoluene (2,4-DNT) | ND< | 1.16 | ND< | 1.28 | ND< | 1.46 |

**EXPLOSIVES CONCENTRATIONS, lb/dscf**

|                              |     |          |     |          |     |          |
|------------------------------|-----|----------|-----|----------|-----|----------|
| HMX                          | ND< | 3.20E-10 | ND< | 3.53E-10 | ND< | 4.00E-10 |
| RDX                          | ND< | 1.45E-10 | ND< | 1.60E-10 | ND< | 1.82E-10 |
| Trinitrobenzene (1,3,5-TNB)  | ND< | 7.27E-11 | ND< | 8.02E-11 | ND< | 9.10E-11 |
| Dinitrobenzene (1,3-DNB)     | ND< | 7.56E-11 | ND< | 8.29E-11 | ND< | 9.41E-11 |
| Nitrobenzene (NB)            | ND< | 7.56E-11 | ND< | 8.29E-11 | ND< | 9.41E-11 |
| Tetryl                       | ND< | 2.18E-10 | ND< | 2.39E-10 | ND< | 2.72E-10 |
| 2,4,6-Trinitrotoluene (TNT)  | ND< | 7.27E-11 | ND< | 8.02E-11 | ND< | 9.10E-11 |
| 2,6-Dinitrotoluene (2,6-DNT) | ND< | 7.27E-11 | ND< | 8.02E-11 | ND< | 9.10E-11 |
| 2,4-Dinitrotoluene (2,4-DNT) | ND< | 7.27E-11 | ND< | 8.02E-11 | ND< | 9.10E-11 |

ND< = Analyte detection limit value.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF EXPLOSIVE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

**TEST DATA**

|             |                              |           |           |
|-------------|------------------------------|-----------|-----------|
| Run number  | T1                           | T2        | T3        |
| Location    | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Time period | 1834-0110                    | 1406-2031 | 1409-2036 |

**EXPLOSIVES EMISSION RATES, lb/hr**

|                              |              |              |              |
|------------------------------|--------------|--------------|--------------|
| HMX                          | ND< 2.12E-05 | ND< 2.25E-05 | ND< 2.34E-05 |
| RDX                          | ND< 9.63E-06 | ND< 1.02E-05 | ND< 1.06E-05 |
| Trinitrobenzene (1,3,5-TNB)  | ND< 4.82E-06 | ND< 5.10E-06 | ND< 5.31E-06 |
| Dinitrobenzene (1,3-DNB)     | ND< 5.01E-06 | ND< 5.28E-06 | ND< 5.49E-06 |
| Nitrobenzene (NB)            | ND< 5.01E-06 | ND< 5.28E-06 | ND< 5.49E-06 |
| Tetryl                       | ND< 1.44E-05 | ND< 1.52E-05 | ND< 1.59E-05 |
| 2,4,6-Trinitrotoluene (TNT)  | ND< 4.82E-06 | ND< 5.10E-06 | ND< 5.31E-06 |
| 2,6 Dinitrotoluene (2,6-DNT) | ND< 4.82E-06 | ND< 5.10E-06 | ND< 5.31E-06 |
| 2,4-Dinitrotoluene (2,4-DNT) | ND< 4.82E-06 | ND< 5.10E-06 | ND< 5.31E-06 |

**EXPLOSIVES CONCENTRATIONS, ppb/v**

|                              |          |          |          |
|------------------------------|----------|----------|----------|
| HMX                          | ND< 0.42 | ND< 0.46 | ND< 0.52 |
| RDX                          | ND< 0.25 | ND< 0.28 | ND< 0.32 |
| Trinitrobenzene (1,3,5-TNB)  | ND< 0.13 | ND< 0.15 | ND< 0.16 |
| Dinitrobenzene (1,3-DNB)     | ND< 0.17 | ND< 0.19 | ND< 0.22 |
| Nitrobenzene (NB)            | ND< 0.24 | ND< 0.26 | ND< 0.29 |
| Tetryl                       | ND< 0.29 | ND< 0.32 | ND< 0.36 |
| 2,4,6-Trinitrotoluene (TNT)  | ND< 0.12 | ND< 0.14 | ND< 0.15 |
| 2,6 Dinitrotoluene (2,6-DNT) | ND< 0.15 | ND< 0.17 | ND< 0.19 |
| 2,4-Dinitrotoluene (2,4-DNT) | ND< 0.15 | ND< 0.17 | ND< 0.19 |

**EXPLOSIVES EMISSION RATES, g/sec**

|                              |              |              |              |
|------------------------------|--------------|--------------|--------------|
| HMX                          | ND< 2.67E-06 | ND< 2.83E-06 | ND< 2.95E-06 |
| RDX                          | ND< 1.21E-06 | ND< 1.29E-06 | ND< 1.34E-06 |
| Trinitrobenzene (1,3,5-TNB)  | ND< 6.07E-07 | ND< 6.43E-07 | ND< 6.69E-07 |
| Dinitrobenzene (1,3-DNB)     | ND< 6.31E-07 | ND< 6.65E-07 | ND< 6.92E-07 |
| Nitrobenzene (NB)            | ND< 6.31E-07 | ND< 6.65E-07 | ND< 6.92E-07 |
| Tetryl                       | ND< 1.82E-06 | ND< 1.92E-06 | ND< 2.00E-06 |
| 2,4,6-Trinitrotoluene (TNT)  | ND< 6.07E-07 | ND< 6.43E-07 | ND< 6.69E-07 |
| 2,6 Dinitrotoluene (2,6-DNT) | ND< 6.07E-07 | ND< 6.43E-07 | ND< 6.69E-07 |
| 2,4-Dinitrotoluene (2,4-DNT) | ND< 6.07E-07 | ND< 6.43E-07 | ND< 6.69E-07 |

ND< = Analyte detection limit value.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

**TEST DATA**

|             | T1        | T2        | T3        |
|-------------|-----------|-----------|-----------|
| Run number  |           |           |           |
| Location    |           |           |           |
| Date        | 01-31-96  | 02-02-96  | 02-04-96  |
| Time period | 1834-0110 | 1406-2031 | 1409-2036 |

**AFTERBURNER DISCHARGE**

**SAMPLING DATA**

|                                                   |          |          |          |
|---------------------------------------------------|----------|----------|----------|
| Sampling duration, min.                           | 360.0    | 360.0    | 360.0    |
| Nozzle diameter, in.                              | 0.622    | 0.622    | 0.622    |
| Cross sectional nozzle area, sq.ft.               | 0.002110 | 0.002110 | 0.002110 |
| Barometric pressure, in. Hg                       | 29.73    | 29.59    | 30.28    |
| Avg. orifice press. diff., in H <sub>2</sub> O    | 0.86     | 0.80     | 0.62     |
| Avg. dry gas meter temp., deg F                   | 53       | 43       | 38       |
| Avg. abs. dry gas meter temp., deg. R             | 513      | 503      | 498      |
| Total liquid collected by train, ml               | 343.2    | 326.0    | 231.4    |
| Std. vol. of H <sub>2</sub> O vapor coll., cu.ft. | 16.2     | 15.3     | 10.9     |
| Dry gas meter calibration factor                  | 1.0050   | 1.0050   | 1.0050   |
| Sample vol. at meter cond., dcf                   | 176.562  | 171.137  | 145.923  |
| Sample vol. at std. cond., dscf (1)               | 181.864  | 178.670  | 157.476  |
| Percent of isokinetic sampling                    | 99.5     | 101.8    | 97.8     |

**GAS STREAM COMPOSITION DATA**

|                                                     |       |       |       |
|-----------------------------------------------------|-------|-------|-------|
| CO <sub>2</sub> , % by volume, dry basis            | 5.7   | 5.8   | 6.1   |
| O <sub>2</sub> , % by volume, dry basis             | 12.1  | 11.9  | 11.9  |
| CO, % by volume dry basis                           | 0.0   | 0.0   | 0.0   |
| N <sub>2</sub> , % by volume, dry basis             | 82.2  | 82.3  | 82.0  |
| Molecular wt. of dry gas, lb/lb mole                | 29.40 | 29.41 | 29.45 |
| H <sub>2</sub> O vapor in gas stream, prop. by vol. | 0.082 | 0.079 | 0.065 |
| Mole fraction of dry gas                            | 0.918 | 0.921 | 0.935 |
| Molecular wt. of wet gas, lb/lb mole                | 28.5  | 28.5  | 28.7  |

**GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA**

|                                            |        |        |        |
|--------------------------------------------|--------|--------|--------|
| Static pressure, in. H <sub>2</sub> O      | -0.10  | -0.10  | -0.10  |
| Static pressure, in. Hg                    | -0.007 | -0.007 | -0.007 |
| Absolute pressure, in. Hg                  | 29.72  | 29.58  | 30.27  |
| Avg. temperature, deg. F                   | 1560   | 1515   | 1510   |
| Avg. absolute temperature, deg.R           | 2020   | 1975   | 1970   |
| Pitot tube coefficient                     | 0.84   | 0.84   | 0.84   |
| Total number of traverse points            | 12     | 12     | 12     |
| Avg. gas stream velocity, ft./sec.         | 16.8   | 15.8   | 13.9   |
| Stack/duct cross sectional area, sq.ft.    | 4.587  | 4.587  | 4.587  |
| Avg. gas stream volumetric flow, wacf/min. | 4630   | 4360   | 3840   |
| Avg. gas stream volumetric flow, dscf/min. | 1100   | 1060   | 970    |

(1) Standard conditions = 68 °F (20 °C) and 29.92 inches Hg (760 mm Hg)

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

| TEST DATA                                         |                       |       |           |       |           |       |
|---------------------------------------------------|-----------------------|-------|-----------|-------|-----------|-------|
| Run number                                        | T1                    |       | T2        |       | T3        |       |
| Location                                          | AFTERBURNER DISCHARGE |       |           |       |           |       |
| Date                                              | 01-31-96              |       | 02-02-96  |       | 02-04-96  |       |
| Time period                                       | 1834-0110             |       | 1406-2031 |       | 1409-2036 |       |
| SEMI-VOLATILE ORGANICS LABORATORY REPORT DATA, ug |                       |       |           |       |           |       |
| Phenol                                            | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Bis (2-chloroethyl) ether                         | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2-Chlorophenol                                    | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 1,3-Dichlorobenzene                               | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 1,4-Dichlorobenzene                               | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Benzyl Alcohol                                    | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 1,2-Dichlorobenzene                               | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2-Methyl phenol                                   | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| bis (2-Chloroisopropyl) ether                     | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 4-Methyl phenol                                   | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| n-Nitroso-di-n-propylamine                        | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Hexachloroethane                                  | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Nitrobenzene                                      | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Isophorone                                        | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2-Nitrophenol                                     | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2,4-Dimethylphenol                                | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Benzoic acid                                      | ND<                   | 1440  | ND<       | 1440  | ND<       | 1440  |
| Bis (2-chloroethoxy)-methane                      | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2,4-Dichlorophenol                                | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 1,2,4-Trichlorobenzene                            | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Naphthalene                                       | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 4-Chloroaniline                                   | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Hexachlorobutadiene                               | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 4-chloro-3-methylphenol                           | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2-Methylnaphthalene                               | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Hexachlorocyclopentadiene                         | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2,4,6-Trichlorophenol                             | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2,4,5-Trichlorophenol                             | ND<                   | 1440  | ND<       | 1440  | ND<       | 1440  |
| 2-Chloronaphthalene                               | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2-Nitroaniline                                    | ND<                   | 1440  | ND<       | 1440  | ND<       | 1440  |
| Dimethylphthalate                                 | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Acenaphthylene                                    | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2,6-Dinitrotoluene                                | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 3-Nitroaniline                                    | ND<                   | 1440  | ND<       | 1440  | ND<       | 1440  |
| Acenaphthene                                      | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2,4-Dinitrophenol                                 | ND<                   | 1440  | ND<       | 1440  | ND<       | 1440  |
| 4-Nitrophenol                                     | ND<                   | 1440  | ND<       | 1440  | ND<       | 1440  |
| Dibenzofuran                                      | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 2,4-Dinitrotoluene                                | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Diethylphthalate                                  |                       | 8 J   |           | 34 J  | ND<       | 300   |
| 4-Chlorophenyl-phenyl ether                       | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Fluorene                                          | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 4-Nitroaniline                                    | ND<                   | 1440  | ND<       | 1440  | ND<       | 1440  |
| 4,6-Dinitro-2-methylphenol                        | ND<                   | 1440  | ND<       | 1440  | ND<       | 1440  |
| n-Nitrosodiphenylamine                            | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 4-Bromophenyl-phenyl ether                        | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Hexachlorobenzene                                 | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Pentachlorophenol                                 |                       | 3 J   |           | 14 J  | ND<       | 1440  |
| Phenanthrene                                      | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Anthracene                                        | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Di-n-butylphthalate                               |                       | 5 J   |           | 300   | ND<       | 300   |
| Fluoranthene                                      | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Pyrene                                            | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Butylbenzylphthalate                              | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| 3,3'-Dichlorobenzidine                            | ND<                   | 600   | ND<       | 600   | ND<       | 600   |
| Benzo(a)anthracene                                | ND<                   | 300   |           | 3 J   | ND<       | 300   |
| Chrysene                                          | ND<                   | 300   |           | 2 J   | ND<       | 300   |
| bis(2-Ethylhexyl)phthalate                        |                       | 23 JB |           | 11 JB |           | 11 JB |
| Di-n-octylphthalate                               | ND<                   | 300   |           | 2 J   | ND<       | 300   |
| Benzo(b)fluoranthene                              | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Benzo(k)fluoranthene                              | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Benzo(a)pyrene                                    | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Indeno(1,2,3-cd)pyrene                            | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Dibenzo(a,h)anthracene                            | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Benzo(g,h,i)perylene                              | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Carbazole                                         | ND<                   | 300   | ND<       | 300   | ND<       | 300   |
| Diesel Range Organics (1)                         | ND<                   | 6000  |           | NA    |           | NA    |

"ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

| TEST DATA                                     | AFTERBURNER DISCHARGE |           |           |         |
|-----------------------------------------------|-----------------------|-----------|-----------|---------|
|                                               | T1                    | T2        | T3        |         |
|                                               | 01-31-96              | 02-02-96  | 02-04-96  |         |
|                                               | 1834-0110             | 1406-2031 | 1409-2036 |         |
| SEMIVOLATILE ORGANICS CONCENTRATIONS, ug/dscm |                       |           |           |         |
| Phenol                                        | ND<                   | 58.25     | ND<       | 67.27   |
| Bis (2-chloroethyl) ether                     | ND<                   | 58.25     | ND<       | 67.27   |
| 2-Chlorophenol                                | ND<                   | 58.25     | ND<       | 67.27   |
| 1,3-Dichlorobenzene                           | ND<                   | 58.25     | ND<       | 67.27   |
| 1,4-Dichlorobenzene                           | ND<                   | 58.25     | ND<       | 67.27   |
| Benzyl Alcohol                                | ND<                   | 58.25     | ND<       | 67.27   |
| 1,2-Dichlorobenzene                           | ND<                   | 58.25     | ND<       | 67.27   |
| 2-Methylphenol                                | ND<                   | 58.25     | ND<       | 67.27   |
| bis (2-Chloroisopropyl) ether                 | ND<                   | 58.25     | ND<       | 67.27   |
| 4-Methylphenol                                | ND<                   | 58.25     | ND<       | 67.27   |
| n-Nitroso-di-n-propylamine                    | ND<                   | 58.25     | ND<       | 67.27   |
| Hexachloroethane                              | ND<                   | 58.25     | ND<       | 67.27   |
| Nitrobenzene                                  | ND<                   | 58.25     | ND<       | 67.27   |
| Isophorone                                    | ND<                   | 58.25     | ND<       | 67.27   |
| 2-Nitrophenol                                 | ND<                   | 58.25     | ND<       | 67.27   |
| 2,4-Dimethylphenol                            | ND<                   | 58.25     | ND<       | 67.27   |
| Benzoic acid                                  | ND<                   | 279.59    | ND<       | 322.89  |
| Bis (2-chloroethoxy)-methane                  | ND<                   | 58.25     | ND<       | 67.27   |
| 2,4-Dichlorophenol                            | ND<                   | 58.25     | ND<       | 67.27   |
| 1,2,4-Trichlorobenzene                        | ND<                   | 58.25     | ND<       | 67.27   |
| Naphthalene                                   | ND<                   | 58.25     | ND<       | 67.27   |
| 4-Chloroaniline                               | ND<                   | 58.25     | ND<       | 67.27   |
| Hexachlorobutadiene                           | ND<                   | 58.25     | ND<       | 67.27   |
| 4-chloro-3-methylphenol                       | ND<                   | 58.25     | ND<       | 67.27   |
| 2-Methylnaphthalene                           | ND<                   | 58.25     | ND<       | 67.27   |
| Hexachlorocyclopentadiene                     | ND<                   | 58.25     | ND<       | 67.27   |
| 2,4,6-Trichlorophenol                         | ND<                   | 58.25     | ND<       | 67.27   |
| 2,4,5-Trichlorophenol                         | ND<                   | 279.59    | ND<       | 322.89  |
| 2-Chloronaphthalene                           | ND<                   | 58.25     | ND<       | 67.27   |
| 2-Nitroaniline                                | ND<                   | 279.59    | ND<       | 322.89  |
| Dimethylphthalate                             | ND<                   | 58.25     | ND<       | 67.27   |
| Acenaphthylene                                | ND<                   | 58.25     | ND<       | 67.27   |
| 2,6-Dinitrotoluene                            | ND<                   | 58.25     | ND<       | 67.27   |
| 3-Nitroaniline                                | ND<                   | 279.59    | ND<       | 322.89  |
| Acenaphthene                                  | ND<                   | 58.25     | ND<       | 67.27   |
| 2,4-Dinitrophenol                             | ND<                   | 279.59    | ND<       | 322.89  |
| 4-Nitrophenol                                 | ND<                   | 279.59    | ND<       | 322.89  |
| Dibenzo furan                                 | ND<                   | 58.25     | ND<       | 67.27   |
| 2,4-Dinitrotoluene                            | ND<                   | 58.25     | ND<       | 67.27   |
| Diethylphthalate                              | ND<                   | 1.55 J    | 6.72 J    | 67.27   |
| 4-Chlorophenyl-phenyl ether                   | ND<                   | 58.25     | ND<       | 67.27   |
| Fluorene                                      | ND<                   | 58.25     | ND<       | 67.27   |
| 4-Nitroaniline                                | ND<                   | 279.59    | ND<       | 322.89  |
| 4,6-Dinitro-2-methylphenol                    | ND<                   | 279.59    | ND<       | 322.89  |
| n-Nitrosodiphenylamine                        | ND<                   | 58.25     | ND<       | 67.27   |
| 4-Bromophenyl-phenyl ether                    | ND<                   | 58.25     | ND<       | 67.27   |
| Hexachlorobenzene                             | ND<                   | 58.25     | ND<       | 67.27   |
| Pentachlorophenol                             | ND<                   | 0.58 J    | 2.77 J    | 322.89  |
| Phenanthrene                                  | ND<                   | 58.25     | ND<       | 67.27   |
| Anthracene                                    | ND<                   | 58.25     | ND<       | 67.27   |
| Di-n-butylphthalate                           | ND<                   | 0.97 J    | ND<       | 67.27   |
| Fluoranthene                                  | ND<                   | 58.25     | ND<       | 67.27   |
| Pyrene                                        | ND<                   | 58.25     | ND<       | 67.27   |
| Butylbenzylphthalate                          | ND<                   | 58.25     | ND<       | 67.269  |
| 3,3'-Dichlorobenzidine                        | ND<                   | 116.50    | ND<       | 134.54  |
| Benzo(a)anthracene                            | ND<                   | 58.25     | 0.59 J    | 67.27   |
| Chrysene                                      | ND<                   | 58.25     | 0.40 J    | 67.27   |
| bis(2-Ethylhexyl)phthalate                    | ND<                   | 4.47 JB   | 2.17 JB   | 2.47 JB |
| Di-n-octylphthalate                           | ND<                   | 58.25     | 0.40 J    | 67.27   |
| Benzo(b)fluoranthene                          | ND<                   | 58.25     | ND<       | 67.27   |
| Benzo(k)fluoranthene                          | ND<                   | 58.25     | ND<       | 67.27   |
| Benzo(a)pyrene                                | ND<                   | 58.25     | ND<       | 67.27   |
| Indeno(1,2,3-cd)pyrene                        | ND<                   | 58.25     | ND<       | 67.27   |
| Dibenzo(a,h)anthracene                        | ND<                   | 58.25     | ND<       | 67.27   |
| Benzo(g,h,i)perylene                          | ND<                   | 58.25     | ND<       | 67.27   |
| Carbazole                                     | ND<                   | 58.25     | ND<       | 67.27   |
| Diesel Range Organics <sup>(1)</sup>          | ND<                   | 1164.96   | NA        | NA      |

"ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.



**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

| TEST DATA                                     |              | AFTERBURNER DISCHARGE |              |           |  |
|-----------------------------------------------|--------------|-----------------------|--------------|-----------|--|
| Run number                                    | T1           | T2                    |              | T3        |  |
| Location                                      |              |                       |              |           |  |
| Date                                          | 01-31-96     | 02-02-96              |              | 02-04-96  |  |
| Time period                                   | 1834-0110    | 1406-2031             |              | 1409-2036 |  |
| SEMIVOLATILE ORGANICS CONCENTRATIONS, lb/dscf |              |                       |              |           |  |
| Phenol                                        | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Bis (2-chloroethyl) ether                     | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2-Chlorophenol                                | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 1,3-Dichlorobenzene                           | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 1,4-Dichlorobenzene                           | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Benzyl Alcohol                                | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 1,2-Dichlorobenzene                           | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2-Methylphenol                                | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| bis (2-Chloroisopropyl) ether                 | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 4-Methylphenol                                | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| n-Nitroso-di-n-propylamine                    | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Hexachloroethane                              | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Nitrobenzene                                  | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Isophorone                                    | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2-Nitrophenol                                 | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2,4-Dimethylphenol                            | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Benzoic acid                                  | ND< 1.75E-08 | ND< 1.78E-08          | ND< 2.02E-08 |           |  |
| Bis (2-chloroethoxy)-methane                  | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2,4-Dichlorophenol                            | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 1,2,4-Trichlorobenzene                        | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Naphthalene                                   | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 4-Chloroaniline                               | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Hexachlorobutadiene                           | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 4-chloro-3-methylphenol                       | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2-Methylnaphthalene                           | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Hexachlorocyclopentadiene                     | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2,4,6-Trichlorophenol                         | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2,4,5-Trichlorophenol                         | ND< 1.75E-08 | ND< 1.78E-08          | ND< 2.02E-08 |           |  |
| 2-Chloronaphthalene                           | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2-Nitroaniline                                | ND< 1.75E-08 | ND< 1.78E-08          | ND< 2.02E-08 |           |  |
| Dimethylphthalate                             | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Acenaphthylene                                | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2,6-Dinitrotoluene                            | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 3-Nitroaniline                                | ND< 1.75E-08 | ND< 1.78E-08          | ND< 2.02E-08 |           |  |
| Acenaphthene                                  | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2,4-Dinitrophenol                             | ND< 1.75E-08 | ND< 1.78E-08          | ND< 2.02E-08 |           |  |
| 4-Nitrophenol                                 | ND< 1.75E-08 | ND< 1.78E-08          | ND< 2.02E-08 |           |  |
| Dibenzofuran                                  | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 2,4-Dinitrotoluene                            | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Diethylphthalate                              | 9.70E-11 J   | 4.20E-10 J            | ND< 4.20E-09 |           |  |
| 4-Chlorophenyl-phenyl ether                   | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Fluorene                                      | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 4-Nitroaniline                                | ND< 1.75E-08 | ND< 1.78E-08          | ND< 2.02E-08 |           |  |
| 4,6-Dinitro-2-methylphenol                    | ND< 1.75E-08 | ND< 1.78E-08          | ND< 2.02E-08 |           |  |
| n-Nitrosodiphenylamine                        | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 4-Bromophenyl-phenyl ether                    | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Hexachlorobenzene                             | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Pentachlorophenol                             | 3.64E-11 J   | 1.73E-10 J            | ND< 2.02E-08 |           |  |
| Phenanthrene                                  | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Anthracene                                    | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Di-n-butylphthalate                           | 6.06E-11 J   | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Fluoranthene                                  | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Pyrene                                        | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Butylbenzylphthalate                          | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| 3,3'-Dichlorobenzidine                        | ND< 7.27E-09 | ND< 7.40E-09          | ND< 8.40E-09 |           |  |
| Benzo(a)anthracene                            | ND< 3.64E-09 | 3.70E-11 J            | ND< 4.20E-09 |           |  |
| Chrysene                                      | ND< 3.64E-09 | 2.47E-11 J            | ND< 4.20E-09 |           |  |
| bis(2-Ethylhexyl)phthalate                    | 2.79E-10 JB  | 1.36E-10 JB           | 1.54E-10 JB  |           |  |
| Di-n-octylphthalate                           | ND< 3.64E-09 | 2.47E-11 J            | ND< 4.20E-09 |           |  |
| Benzo(b)fluoranthene                          | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Benzo(k)fluoranthene                          | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Benzo(a)pyrene                                | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Indeno(1,2,3-cd)pyrene                        | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Dibenzo(a,h)anthracene                        | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Benzo(g,h,i)perylene                          | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Carbazole                                     | ND< 3.64E-09 | ND< 3.70E-09          | ND< 4.20E-09 |           |  |
| Diesel Range Organics <sup>(1)</sup>          | ND< 7.27E-08 | NA                    | NA           |           |  |

\*ND<(....)\* = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

| TEST DATA                                     |     | AFTERBURNER DISCHARGE |           |             |              |
|-----------------------------------------------|-----|-----------------------|-----------|-------------|--------------|
| Run number                                    |     | T1                    | T2        |             | T3           |
| Location                                      |     |                       |           |             |              |
| Date                                          |     | 01-31-96              | 02-02-96  |             | 02-04-96     |
| Time period                                   |     | 1834-0110             | 1406-2031 |             | 1409-2036    |
| SEMIVOLATILE ORGANICS EMISSION RESULTS, lb/hr |     |                       |           |             |              |
| Phenol                                        | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Bis (2-chloroethyl) ether                     | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2-Chlorophenol                                | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 1,3-Dichlorobenzene                           | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 1,4-Dichlorobenzene                           | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Benzyl Alcohol                                | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 1,2-Dichlorobenzene                           | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2-Methylphenol                                | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| bis (2-Chloroisopropyl) ether                 | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 4-Methylphenol                                | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| n-Nitroso-di-n-propylamine                    | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Hexachloroethane                              | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Nitrobenzene                                  | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Isophorone                                    | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2-Nitrophenol                                 | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2,4-Dimethylphenol                            | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Benzoic acid                                  | ND< | 1.16E-03              | ND<       | 1.13E-03    | ND< 1.18E-03 |
| Bis (2-chloroethoxy)-methane                  | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2,4-Dichlorophenol                            | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 1,2,4-Trichlorobenzene                        | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Naphthalene                                   | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 4-Chloroaniline                               | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Hexachlorobutadiene                           | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 4-chloro-3-methylphenol                       | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2-Methylnaphthalene                           | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Hexachlorocyclopentadiene                     | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2,4,6-Trichlorophenol                         | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2,4,5-Trichlorophenol                         | ND< | 1.16E-03              | ND<       | 1.13E-03    | ND< 1.18E-03 |
| 2-Chloronaphthalene                           | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2-Nitroaniline                                | ND< | 1.16E-03              | ND<       | 1.13E-03    | ND< 1.18E-03 |
| Dimethylphthalate                             | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Acenaphthylene                                | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2,6-Dinitrotoluene                            | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 3-Nitroaniline                                | ND< | 1.16E-03              | ND<       | 1.13E-03    | ND< 1.18E-03 |
| Acenaphthene                                  | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2,4-Dinitrophenol                             | ND< | 1.16E-03              | ND<       | 1.13E-03    | ND< 1.18E-03 |
| 4-Nitrophenol                                 | ND< | 1.16E-03              | ND<       | 1.13E-03    | ND< 1.18E-03 |
| Dibenzo furan                                 | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 2,4-Dinitrotoluene                            | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Diethylphthalate                              |     | 6.42E-06 J            |           | 2.67E-05 J  | ND< 2.45E-04 |
| 4-Chlorophenyl-phenyl ether                   | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Fluorene                                      | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 4-Nitroaniline                                | ND< | 1.16E-03              | ND<       | 1.13E-03    | ND< 1.18E-03 |
| 4,6-Dinitro-2-methylphenol                    | ND< | 1.16E-03              | ND<       | 1.13E-03    | ND< 1.18E-03 |
| n-Nitrosodiphenylamine                        | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 4-Bromophenyl-phenyl ether                    | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Hexachlorobenzene                             | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Pentachlorophenol                             |     | 2.41E-06 J            |           | 1.10E-05 J  | ND< 1.18E-03 |
| Phenanthrene                                  | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Anthracene                                    | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Di-n-butylphthalate                           |     | 4.01E-06 J            | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Fluoranthene                                  | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Pyrene                                        | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Butylbenzylphthalate                          | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| 3,3'-Dichlorobenzidine                        | ND< | 4.82E-04              | ND<       | 4.71E-04    | ND< 4.90E-04 |
| Benzo(a)anthracene                            | ND< | 2.41E-04              |           | 2.36E-06 J  | ND< 2.45E-04 |
| Chrysene                                      | ND< | 2.41E-04              |           | 1.57E-06 J  | ND< 2.45E-04 |
| bis(2-Ethylhexyl)phthalate                    |     | 1.85E-05 JB           |           | 8.64E-06 JB | 8.99E-06 JB  |
| Di-n-octylphthalate                           | ND< | 2.41E-04              |           | 1.57E-06 J  | ND< 2.45E-04 |
| Benzo(b)fluoranthene                          | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Benzo(k)fluoranthene                          | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Benzo(a)pyrene                                | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Indeno(1,2,3-cd)pyrene                        | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Dibenzo(a,h)anthracene                        | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Benzo(g,h,i)perylene                          | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Carbazole                                     | ND< | 2.41E-04              | ND<       | 2.36E-04    | ND< 2.45E-04 |
| Diesel Range Organics (1)                     | ND< | 4.82E-03              |           | NA          | NA           |

\*ND<(....)\* = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

| TEST DATA                                   |           | AFTERBURNER DISCHARGE |     |           |     |         |
|---------------------------------------------|-----------|-----------------------|-----|-----------|-----|---------|
| Run number                                  | T1        | T2                    |     | T3        |     |         |
| Location                                    |           |                       |     |           |     |         |
| Date                                        | 01-31-96  | 02-02-96              |     | 02-04-96  |     |         |
| Time period                                 | 1834-0110 | 1406-2031             |     | 1409-2036 |     |         |
| SEMIVOLATILE ORGANICS CONCENTRATIONS, ppb/v |           |                       |     |           |     |         |
| Phenol                                      | ND<       | 14.89                 | ND< | 15.16     | ND< | 17.20   |
| Bis (2-chloroethyl) ether                   | ND<       | 9.80                  | ND< | 9.97      | ND< | 11.32   |
| 2-Chlorophenol                              | ND<       | 10.90                 | ND< | 11.10     | ND< | 12.59   |
| 1,3-Dichlorobenzene                         | ND<       | 9.53                  | ND< | 9.70      | ND< | 11.01   |
| 1,4-Dichlorobenzene                         | ND<       | 9.53                  | ND< | 9.70      | ND< | 11.01   |
| Benzyl Alcohol                              | ND<       | 12.959                | ND< | 13.19     | ND< | 14.966  |
| 1,2-Dichlorobenzene                         | ND<       | 9.53                  | ND< | 9.70      | ND< | 11.01   |
| 2-Methyl phenol                             | ND<       | 12.96                 | ND< | 13.19     | ND< | 14.97   |
| bis (2-Chloroisopropyl) ether               | ND<       | 8.24                  | ND< | 8.39      | ND< | 9.52    |
| 4-Methylphenol                              | ND<       | 12.96                 | ND< | 13.19     | ND< | 14.97   |
| n-Nitroso-di-n-propylamine                  | ND<       | 10.76                 | ND< | 10.95     | ND< | 12.43   |
| Hexachloroethane                            | ND<       | 5.92                  | ND< | 6.03      | ND< | 6.84    |
| Nitrobenzene                                | ND<       | 11.38                 | ND< | 11.59     | ND< | 13.15   |
| Isophorone                                  | ND<       | 10.14                 | ND< | 10.32     | ND< | 11.71   |
| 2-Nitrophenol                               | ND<       | 10.07                 | ND< | 10.25     | ND< | 11.63   |
| 2,4-Dimethylphenol                          | ND<       | 11.47                 | ND< | 11.67     | ND< | 13.25   |
| Benzoic acid                                | ND<       | 55.08                 | ND< | 56.07     | ND< | 63.61   |
| Bis (2-chloroethoxy)-methane                | ND<       | 8.10                  | ND< | 8.24      | ND< | 9.35    |
| 2,4-Dichlorophenol                          | ND<       | 8.60                  | ND< | 8.75      | ND< | 9.93    |
| 1,2,4-Trichlorobenzene                      | ND<       | 7.72                  | ND< | 7.86      | ND< | 8.92    |
| Naphthalene                                 | ND<       | 10.93                 | ND< | 11.128    | ND< | 12.626  |
| 4-Chloroaniline                             | ND<       | 10.98                 | ND< | 11.18     | ND< | 12.69   |
| Hexachlorobutadiene                         | ND<       | 5.37                  | ND< | 5.47      | ND< | 6.21    |
| 4-chloro-3-methylphenol                     | ND<       | 9.83                  | ND< | 10.00     | ND< | 11.35   |
| 2-Methylnaphthalene                         | ND<       | 9.855                 | ND< | 10.031    | ND< | 11.381  |
| Hexachlorocyclopentadiene                   | ND<       | 5.14                  | ND< | 5.23      | ND< | 5.93    |
| 2,4,6-Trichlorophenol                       | ND<       | 7.10                  | ND< | 7.22      | ND< | 8.20    |
| 2,4,5-Trichlorophenol                       | ND<       | 34.07                 | ND< | 34.68     | ND< | 39.34   |
| 2-Chloronaphthalene                         | ND<       | 8.62                  | ND< | 8.77      | ND< | 9.95    |
| 2-Nitroaniline                              | ND<       | 48.70                 | ND< | 49.57     | ND< | 56.24   |
| Dimethylphthalate                           | ND<       | 7.22                  | ND< | 7.35      | ND< | 8.33    |
| Acenaphthylene                              | ND<       | 9.21                  | ND< | 9.37      | ND< | 10.63   |
| 2,6-Dinitrotoluene                          | ND<       | 7.69                  | ND< | 7.83      | ND< | 8.89    |
| 3-Nitroaniline                              | ND<       | 48.70                 | ND< | 49.57     | ND< | 56.24   |
| Acenaphthene                                | ND<       | 9.09                  | ND< | 9.25      | ND< | 10.49   |
| 2,4-Dinitrophenol                           | ND<       | 36.53                 | ND< | 37.19     | ND< | 42.19   |
| 4-Nitrophenol                               | ND<       | 48.35                 | ND< | 49.22     | ND< | 55.84   |
| Dibenzofuran                                | ND<       | 8.33                  | ND< | 8.48      | ND< | 9.62    |
| 2,4-Dinitrotoluene                          | ND<       | 7.69                  | ND< | 7.83      | ND< | 8.89    |
| Diethylphthalate                            |           | 0.168 J               |     | 0.73 J    | ND< | 7.28    |
| 4-Chlorophenyl-phenyl ether                 | ND<       | 6.87                  | ND< | 6.99      | ND< | 7.93    |
| Fluorene                                    | ND<       | 8.43                  | ND< | 8.58      | ND< | 9.74    |
| 4-Nitroaniline                              | ND<       | 48.70                 | ND< | 49.57     | ND< | 56.24   |
| 4,6-Dinitro-2-methylphenol                  | ND<       | 33.96                 | ND< | 34.56     | ND< | 39.21   |
| n-Nitrosodiphenylamine                      | ND<       | 7.07                  | ND< | 7.20      | ND< | 8.16    |
| 4-Bromophenyl-phenyl ether                  | ND<       | 5.65                  | ND< | 5.75      | ND< | 6.53    |
| Hexachlorobenzene                           | ND<       | 4.92                  | ND< | 5.01      | ND< | 5.68    |
| Pentachlorophenol                           |           | 0.05 J                |     | 0.25 J    | ND< | 29.17   |
| Phenanthrene                                | ND<       | 7.862                 | ND< | 8.00      | ND< | 9.08    |
| Anthracene                                  | ND<       | 7.86                  | ND< | 8.00      | ND< | 9.08    |
| Di-n-butylphthalate                         |           | 0.08 J                |     | 5.12      | ND< | 5.81    |
| Fluoranthene                                | ND<       | 6.929                 | ND< | 7.05      | ND< | 8.00    |
| Pyrene                                      | ND<       | 6.93                  | ND< | 7.05      | ND< | 8.00    |
| Butylbenzylphthalate                        | ND<       | 4.486                 | ND< | 4.566     | ND< | 5.1808  |
| 3,3'-Dichlorobenzidine                      | ND<       | 11.07                 | ND< | 11.27     | ND< | 12.79   |
| Benzo(a)anthracene                          | ND<       | 6.14                  |     | 0.06 J    | ND< | 7.09    |
| Chrysene                                    | ND<       | 6.14                  |     | 0.04 J    | ND< | 7.09    |
| bis(2-Ethylhexyl)phthalate                  |           | 0.28 JB               |     | 0.13 JB   |     | 0.15 JB |
| Di-n-octylphthalate                         | ND<       | 3.59                  |     | 0.02 J    | ND< | 4.14    |
| Benzo(b)fluoranthene                        | ND<       | 5.55                  | ND< | 5.65      | ND< | 6.41    |
| Benzo(k)fluoranthene                        | ND<       | 5.55                  | ND< | 5.65      | ND< | 6.41    |
| Benzo(a)pyrene                              | ND<       | 5.55                  | ND< | 5.65      | ND< | 6.41    |
| Indeno(1,2,3-cd)pyrene                      | ND<       | 5.07                  | ND< | 5.16      | ND< | 5.86    |
| Dibenzo(a,h)anthracene                      | ND<       | 5.03                  | ND< | 5.12      | ND< | 5.81    |
| Benzo(g,h,i)perylene                        | ND<       | 5.07                  | ND< | 5.16      | ND< | 5.86    |
| Carbazole                                   | ND<       | 8.38                  | ND< | 8.53      | ND< | 9.68    |
| Diesel Range Organics (1)                   | ND<       | 196.98                |     | NA        |     | NA      |

"ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS**

| TEST DATA<br>Run number<br>Location<br>Date<br>Time period | AFTERBURNER DISCHARGE |              |              |  |
|------------------------------------------------------------|-----------------------|--------------|--------------|--|
|                                                            | T1                    | T2           | T3           |  |
|                                                            | 01-31-96              | 02-02-96     | 02-04-96     |  |
|                                                            | 1834-0110             | 1406-2031    | 1409-2036    |  |
| <b>SEMIVOLATILE ORGANICS EMISSION RESULTS, g/sec</b>       |                       |              |              |  |
| Phenol                                                     | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Bis (2-chloroethyl) ether                                  | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2-Chlorophenol                                             | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 1,3-Dichlorobenzene                                        | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 1,4-Dichlorobenzene                                        | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Benzyl Alcohol                                             | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 1,2-Dichlorobenzene                                        | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2-Methylphenol                                             | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| bis (2-Chloroisopropyl) ether                              | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 4-Methylphenol                                             | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| n-Nitroso-di-n-propylamine                                 | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Hexachloroethane                                           | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Nitrobenzene                                               | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Isophorone                                                 | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2-Nitrophenol                                              | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2,4-Dimethylphenol                                         | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Benzoic acid                                               | ND< 1.46E-04          | ND< 1.42E-04 | ND< 1.48E-04 |  |
| Bis (2-chloroethoxy)-methane                               | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2,4-Dichlorophenol                                         | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 1,2,4-Trichlorobenzene                                     | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Naphthalene                                                | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 4-Chloroaniline                                            | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Hexachlorobutadiene                                        | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 4-chloro-3-methylphenol                                    | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2-Methylnaphthalene                                        | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Hexachlorocyclopentadiene                                  | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2,4,6-Trichlorophenol                                      | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2,4,5-Trichlorophenol                                      | ND< 1.46E-04          | ND< 1.42E-04 | ND< 1.48E-04 |  |
| 2-Chloronaphthalene                                        | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2-Nitroaniline                                             | ND< 1.46E-04          | ND< 1.42E-04 | ND< 1.48E-04 |  |
| Dimethylphthalate                                          | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Acenaphthylene                                             | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2,6-Dinitrotoluene                                         | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 3-Nitroaniline                                             | ND< 1.46E-04          | ND< 1.42E-04 | ND< 1.48E-04 |  |
| Acenaphthene                                               | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2,4-Dinitrophenol                                          | ND< 1.46E-04          | ND< 1.42E-04 | ND< 1.48E-04 |  |
| 4-Nitrophenol                                              | ND< 1.46E-04          | ND< 1.42E-04 | ND< 1.48E-04 |  |
| Dibenzo furan                                              | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 2,4-Dinitrotoluene                                         | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Diethylphthalate                                           | 8.09E-07 J            | 3.36E-06 J   | ND< 3.09E-05 |  |
| 4-Chlorophenyl-phenyl ether                                | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Fluorene                                                   | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 4-Nitroaniline                                             | ND< 1.46E-04          | ND< 1.42E-04 | ND< 1.48E-04 |  |
| 4,6-Dinitro-2-methylphenol                                 | ND< 1.46E-04          | ND< 1.42E-04 | ND< 1.48E-04 |  |
| n-Nitrosodiphenylamine                                     | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 4-Bromophenyl-phenyl ether                                 | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Hexachlorobenzene                                          | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Pentachlorophenol                                          | 3.03E-07 J            | 1.38E-06 J   | ND< 1.48E-04 |  |
| Phenanthrene                                               | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Anthracene                                                 | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Di-n-butylphthalate                                        | 5.06E-07 J            | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Fluoranthene                                               | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Pyrene                                                     | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Butylbenzylphthalate                                       | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| 3,3'-Dichlorobenzidine                                     | ND< 6.07E-05          | ND< 5.94E-05 | ND< 6.18E-05 |  |
| Benzo(a)anthracene                                         | ND< 3.03E-05          | 2.97E-07 J   | ND< 3.09E-05 |  |
| Chrysene                                                   | ND< 3.03E-05          | 1.98E-07 J   | ND< 3.09E-05 |  |
| bis(2-Ethylhexyl)phthalate                                 | 2.33E-06 JB           | 1.09E-06 JB  | 1.13E-06 JB  |  |
| Di-n-octylphthalate                                        | ND< 3.03E-05          | 1.98E-07 J   | ND< 3.09E-05 |  |
| Benzo(b)fluoranthene                                       | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Benzo(k)fluoranthene                                       | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Benzo(a)pyrene                                             | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Indeno(1,2,3-cd)pyrene                                     | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Dibenzo(a,h)anthracene                                     | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Benzo(g,h,i)perylene                                       | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Carbazole                                                  | ND< 3.03E-05          | ND< 2.97E-05 | ND< 3.09E-05 |  |
| Diesel Range Organics <sup>(1)</sup>                       | ND< 6.07E-04          | NA           | NA           |  |

"ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

|                  | T1                           | T2        | T3        |
|------------------|------------------------------|-----------|-----------|
| Test run number  |                              |           |           |
| Test location    | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Test date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Test time period | 1834-0121                    | 1405-2038 | 1410-2045 |

**SAMPLING DATA**

|                                                   |          |          |          |
|---------------------------------------------------|----------|----------|----------|
| Sampling duration, min.                           | 360.0    | 360.0    | 360.0    |
| Nozzle diameter, in.                              | 0.620    | 0.620    | 0.620    |
| Cross sectional nozzle area, sq.ft.               | 0.002097 | 0.002097 | 0.002097 |
| Barometric pressure, in. Hg                       | 29.73    | 29.59    | 30.28    |
| Avg. orifice press. diff., in H <sub>2</sub> O    | 0.83     | 0.77     | 0.65     |
| Avg. dry gas meter temp., deg F                   | 49       | 50       | 49       |
| Avg. abs. dry gas meter temp., deg. R             | 509      | 510      | 509      |
| Total liquid collected by train, ml               | 341.1    | 299.4    | 252.8    |
| Std. vol. of H <sub>2</sub> O vapor coll., cu.ft. | 16.1     | 14.1     | 11.9     |
| Dry gas meter calibration factor                  | 0.993    | 0.993    | 0.993    |
| Sample vol. at meter cond., dcf                   | 176.066  | 169.257  | 153.896  |
| Sample vol. at std. cond., dscf (1)               | 180.526  | 172.471  | 160.738  |
| Percent of isokinetic sampling                    | 100.6    | 102.1    | 99.5     |

**GAS STREAM COMPOSITION DATA**

|                                                     |       |       |       |
|-----------------------------------------------------|-------|-------|-------|
| CO <sub>2</sub> , % by volume, dry basis            | 5.7   | 5.8   | 6.1   |
| O <sub>2</sub> , % by volume, dry basis             | 12.1  | 11.9  | 11.9  |
| CO, % by volume, dry basis                          | 0.0   | 0.0   | 0.0   |
| N <sub>2</sub> , % by volume, dry basis             | 82.2  | 82.3  | 82.0  |
| Molecular wt. of dry gas, lb/lb mole                | 29.40 | 29.41 | 29.45 |
| H <sub>2</sub> O vapor in gas stream, prop. by vol. | 0.082 | 0.076 | 0.069 |
| Mole fraction of dry gas                            | 0.918 | 0.924 | 0.931 |
| Molecular wt. of wet gas, lb/lb mole                | 28.5  | 28.5  | 28.7  |

**GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA**

|                                            |        |        |        |
|--------------------------------------------|--------|--------|--------|
| Static pressure, in. H <sub>2</sub> O      | -0.10  | -0.10  | -0.10  |
| Static pressure, in. Hg                    | -0.007 | -0.007 | -0.007 |
| Absolute pressure, in. Hg                  | 29.72  | 29.58  | 30.27  |
| Avg. temperature, deg. F                   | 1541   | 1517   | 1509   |
| Avg. absolute temperature, deg.R           | 2001   | 1977   | 1969   |
| Pitot tube coefficient                     | 0.84   | 0.84   | 0.84   |
| Total number of traverse points            | 12     | 12     | 12     |
| Avg. gas stream velocity, ft./sec.         | 16.5   | 15.3   | 14.1   |
| Stack/duct cross sectional area, sq.ft.    | 4.59   | 4.59   | 4.59   |
| Avg. gas stream volumetric flow, wacf/min. | 4530   | 4210   | 3890   |
| Avg. gas stream volumetric flow, dscf/min. | 1090   | 1030   | 980    |

(1) Standard conditions = 68 degrees F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

| Test run number  | T1                           | T2        | T3        |
|------------------|------------------------------|-----------|-----------|
| Test location    | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Test date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Test time period | 1834-0121                    | 1405-2038 | 1410-2045 |

**TOXICITY EQUIVALENCY EMISSIONS (I-TEFs/89), ng/dscm**

|                                                               |                   |                   |                   |
|---------------------------------------------------------------|-------------------|-------------------|-------------------|
| 2,3,7,8-TCDD                                                  | 7.82E-03          | 4.09E-03          | 4.39E-03          |
| 1,2,3,7,8-PeCDD                                               | 1.56E-02          | 7.17E-03          | 1.21E-02          |
| 1,2,3,4,7,8-HxCDD                                             | 2.54E-03          | 1.23E-03          | 1.32E-03          |
| 1,2,3,6,7,8-HxCDD                                             | 2.93E-03          | 1.02E-03          | 1.54E-03          |
| 1,2,3,7,8,9-HxCDD                                             | 6.45E-03          | 2.25E-03          | 3.95E-03          |
| 1,2,3,4,6,7,8-HpCDD                                           | 2.35E-03          | 6.96E-04          | 1.60E-03          |
| OCDD                                                          |                   |                   |                   |
| Total TCDD                                                    | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total PeCDD                                                   | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total HxCDD                                                   | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total HpCDD                                                   | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| OCDD                                                          | 6.06E-04          | 2.25E-04          | 4.39E-04          |
| 2,3,7,8-TCDF                                                  | ND< 1.37E-04      | 2.05E-04          | 2.20E-04          |
| 1,2,3,7,8-PeCDF                                               | ND< 1.96E-04      | 1.02E-04          | 2.20E-04          |
| 2,3,4,7,8-PeCDF                                               | ND< 1.96E-03      | 3.07E-03          | 2.20E-03          |
| 1,2,3,4,7,8-HxCDF                                             | 3.91E-04          | 8.19E-04          | 1.32E-03          |
| 1,2,3,6,7,8-HxCDF                                             | 1.96E-04          | 4.09E-04          | 6.59E-04          |
| 2,3,4,6,7,8-HxCDF                                             | 3.91E-04          | 6.14E-04          | 6.59E-04          |
| 1,2,3,7,8,9-HxCDF                                             | ND< 1.96E-04      | ND< 4.09E-04      | ND< 2.20E-04      |
| 1,2,3,4,6,7,8-HpCDF                                           | 9.78E-05          | 1.64E-04          | 2.20E-04          |
| 1,2,3,4,7,8,9-HpCDF                                           | 1.96E-05          | 2.05E-05          | 4.39E-05          |
| OCDF                                                          |                   |                   |                   |
| Total TCDF                                                    | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total PeCDF                                                   | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total HxCDF                                                   | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total HpCDF                                                   | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| OCDF                                                          | 1.56E-05          | 1.02E-05          | 1.10E-05          |
| <b>TOTAL 2,3,7,8-TCDD EQUIVALENTS, ng/dscm <sup>(1)</sup></b> | <b>≤ 4.20E-02</b> | <b>≤ 2.25E-02</b> | <b>≤ 3.11E-02</b> |

**DETECTED TOXICITY EQUIVALENCY EMISSIONS (I-TEFs/89), ng/dscm**

|                                                                        |                 |                 |                 |
|------------------------------------------------------------------------|-----------------|-----------------|-----------------|
| 2,3,7,8-TCDD                                                           | 7.82E-03        | 4.09E-03        | 4.39E-03        |
| 1,2,3,7,8-PeCDD                                                        | 1.56E-02        | 7.17E-03        | 1.21E-02        |
| 1,2,3,4,7,8-HxCDD                                                      | 2.54E-03        | 1.23E-03        | 1.32E-03        |
| 1,2,3,6,7,8-HxCDD                                                      | 2.93E-03        | 1.02E-03        | 1.54E-03        |
| 1,2,3,7,8,9-HxCDD                                                      | 6.45E-03        | 2.25E-03        | 3.95E-03        |
| 1,2,3,4,6,7,8-HpCDD                                                    | 2.35E-03        | 6.96E-04        | 1.60E-03        |
| OCDD                                                                   | 6.06E-04        | 2.25E-04        | 4.39E-04        |
| 2,3,7,8-TCDF                                                           | ND              | 2.05E-04        | 2.20E-04        |
| 1,2,3,7,8-PeCDF                                                        | ND              | 1.02E-04        | 2.20E-04        |
| 2,3,4,7,8-PeCDF                                                        | ND              | 3.07E-03        | 2.20E-03        |
| 1,2,3,4,7,8-HxCDF                                                      | 3.91E-04        | 8.19E-04        | 1.32E-03        |
| 1,2,3,6,7,8-HxCDF                                                      | 1.96E-04        | 4.09E-04        | 6.59E-04        |
| 2,3,4,6,7,8-HxCDF                                                      | 3.91E-04        | 6.14E-04        | 6.59E-04        |
| 1,2,3,7,8,9-HxCDF                                                      | ND              | ND              | ND              |
| 1,2,3,4,6,7,8-HpCDF                                                    | 9.78E-05        | 1.64E-04        | 2.20E-04        |
| 1,2,3,4,7,8,9-HpCDF                                                    | 1.96E-05        | 2.05E-05        | 4.39E-05        |
| OCDF                                                                   | 1.56E-05        | 1.02E-05        | 1.10E-05        |
| <b>DETECTED TOTAL 2,3,7,8-TCDD EQUIVALENTS, ng/dscm <sup>(2)</sup></b> | <b>3.95E-02</b> | <b>2.21E-02</b> | <b>3.09E-02</b> |

(1) Calculated Total 2,3,7,8-TCDD equivalents based on all detected and non-detected values.

(2) Calculated Total 2,3,7,8-TCDD equivalents based on detected values only.

(3) Zero value denotes no toxic equivalency.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

| Test run number  | T1                           | T2        | T3        |
|------------------|------------------------------|-----------|-----------|
| Test location    | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Test date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Test time period | 1834-0121                    | 1405-2038 | 1410-2045 |

**TOXICITY EQUIVALENCY EMISSIONS (I-TEFs/89), lb/hr**

|                                                            |                   |                   |                   |
|------------------------------------------------------------|-------------------|-------------------|-------------------|
| 2,3,7,8-TCDD                                               | 3.20E-11          | 1.58E-11          | 1.62E-11          |
| 1,2,3,7,8-PeCDD                                            | 6.39E-11          | 2.76E-11          | 4.44E-11          |
| 1,2,3,4,7,8-HxCDD                                          | 1.04E-11          | 4.73E-12          | 4.83E-12          |
| 1,2,3,6,7,8-HxCDD                                          | 1.20E-11          | 3.94E-12          | 5.66E-12          |
| 1,2,3,7,8,9-HxCDD                                          | 2.64E-11          | 8.67E-12          | 1.45E-11          |
| 1,2,3,4,6,7,8-HpCDD                                        | 9.59E-12          | 2.68E-12          | 5.90E-12          |
| Total TCDD                                                 | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total PeCDD                                                | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total HxCDD                                                | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total HpCDD                                                | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| OCDD                                                       | 2.48E-12          | 8.67E-13          | 1.62E-12          |
| 2,3,7,8-TCDF                                               | ND< 5.59E-13      | 7.88E-13          | 8.08E-13          |
| 1,2,3,7,8-PeCDF                                            | ND< 7.99E-13      | 3.94E-13          | 8.08E-13          |
| 2,3,4,7,8-PeCDF                                            | ND< 7.99E-12      | 1.18E-11          | 8.08E-12          |
| 1,2,3,4,7,8-HxCDF                                          | 1.60E-12          | 3.15E-12          | 4.85E-12          |
| 1,2,3,6,7,8-HxCDF                                          | 7.99E-13          | 1.58E-12          | 2.42E-12          |
| 2,3,4,6,7,8-HxCDF                                          | 1.60E-12          | 2.36E-12          | 2.42E-12          |
| 1,2,3,7,8,9-HxCDF                                          | ND< 7.99E-13      | ND< 1.58E-12      | ND< 8.08E-13      |
| 1,2,3,4,6,7,8-HpCDF                                        | 3.99E-13          | 6.30E-13          | 8.08E-13          |
| 1,2,3,4,7,8,9-HpCDF                                        | 7.99E-14          | 7.88E-14          | 1.62E-13          |
| Total TCDF                                                 | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total PeCDF                                                | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total HxCDF                                                | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| Total HpCDF                                                | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  | 0 <sup>(3)</sup>  |
| OCDF                                                       | 6.39E-14          | 3.94E-14          | 4.04E-14          |
| <b>TOTAL 2,3,7,8-TCDD EQUIVALENTS, lb/hr<sup>(1)</sup></b> | <b>≤ 1.71E-10</b> | <b>≤ 8.66E-11</b> | <b>≤ 1.14E-10</b> |

**DETECTED TOXICITY EQUIVALENCY EMISSIONS (I-TEFs/89), lb/hr**

|                                                                     |                 |                 |                 |
|---------------------------------------------------------------------|-----------------|-----------------|-----------------|
| 2,3,7,8-TCDD                                                        | 3.20E-11        | 1.58E-11        | 1.62E-11        |
| 1,2,3,7,8-PeCDD                                                     | 6.39E-11        | 2.76E-11        | 4.44E-11        |
| 1,2,3,4,7,8-HxCDD                                                   | 1.04E-11        | 4.73E-12        | 4.83E-12        |
| 1,2,3,6,7,8-HxCDD                                                   | 1.20E-11        | 3.94E-12        | 5.66E-12        |
| 1,2,3,7,8,9-HxCDD                                                   | 2.64E-11        | 8.67E-12        | 1.45E-11        |
| 1,2,3,4,6,7,8-HpCDD                                                 | 9.59E-12        | 2.68E-12        | 5.90E-12        |
| OCDD                                                                | 2.48E-12        | 8.67E-13        | 1.62E-12        |
| 2,3,7,8-TCDF                                                        | ND              | 7.88E-13        | 8.08E-13        |
| 1,2,3,7,8-PeCDF                                                     | ND              | 3.94E-13        | 8.08E-13        |
| 2,3,4,7,8-PeCDF                                                     | ND              | 1.18E-11        | 8.08E-12        |
| 1,2,3,4,7,8-HxCDF                                                   | 1.60E-12        | 3.15E-12        | 4.85E-12        |
| 1,2,3,6,7,8-HxCDF                                                   | 7.99E-13        | 1.58E-12        | 2.42E-12        |
| 2,3,4,6,7,8-HxCDF                                                   | 1.60E-12        | 2.36E-12        | 2.42E-12        |
| 1,2,3,7,8,9-HxCDF                                                   | ND              | ND              | ND              |
| 1,2,3,4,6,7,8-HpCDF                                                 | 3.99E-13        | 6.30E-13        | 8.08E-13        |
| 1,2,3,4,7,8,9-HpCDF                                                 | 7.99E-14        | 7.88E-14        | 1.62E-13        |
| OCDF                                                                | 6.39E-14        | 3.94E-14        | 4.04E-14        |
| <b>DETECTED TOTAL 2,3,7,8-TCDD EQUIVALENTS, lb/hr<sup>(2)</sup></b> | <b>1.61E-10</b> | <b>8.50E-11</b> | <b>1.14E-10</b> |

(1) Calculated Total 2,3,7,8-TCDD equivalents based on all detected and non-detected values.

(2) Calculated Total 2,3,7,8-TCDD equivalents based on detected values only.

(3) Zero value denotes no toxic equivalency.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

| Test run number  | T1                           | T2        | T3        |
|------------------|------------------------------|-----------|-----------|
| Test location    | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Test date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Test time period | 1834-0121                    | 1405-2038 | 1410-2045 |

**DIOXIN LABORATORY REPORT DATA, ng**

|                     |        |       |       |
|---------------------|--------|-------|-------|
| 2,3,7,8-TCDD        | 0.040  | 0.020 | 0.020 |
| 1,2,3,7,8-PeCDD     | 0.160  | 0.070 | 0.110 |
| 1,2,3,4,7,8-HxCDD   | 0.130  | 0.060 | 0.060 |
| 1,2,3,6,7,8-HxCDD   | 0.150  | 0.050 | 0.070 |
| 1,2,3,7,8,9-HxCDD   | 0.330  | 0.110 | 0.180 |
| 1,2,3,4,6,7,8-HpCDD | 1.200  | 0.340 | 0.730 |
| Total TCDD          | 0.840  | 0.360 | 0.260 |
| Total PeCDD         | 1.900  | 0.790 | 1.300 |
| Total HxCDD         | 2.600  | 0.960 | 1.400 |
| Total HpCDD         | 2.800  | 0.750 | 1.900 |
| OCDD                | 3.100  | 1.100 | 2.000 |
| Total PCDD          | 11.240 | 3.960 | 6.860 |

**DIOXIN CONCENTRATION, ppb/v**

mole wt.

|                     |          |          |          |          |
|---------------------|----------|----------|----------|----------|
| 2,3,7,8-TCDD        | 321.9744 | 5.85E-07 | 3.06E-07 | 3.28E-07 |
| 1,2,3,7,8-PeCDD     | 356.4195 | 2.11E-06 | 9.67E-07 | 1.63E-06 |
| 1,2,3,4,7,8-HxCDD   | 390.8646 | 1.57E-06 | 7.56E-07 | 8.11E-07 |
| 1,2,3,6,7,8-HxCDD   | 390.8646 | 1.81E-06 | 6.30E-07 | 9.47E-07 |
| 1,2,3,7,8,9-HxCDD   | 390.8646 | 3.97E-06 | 1.39E-06 | 2.43E-06 |
| 1,2,3,4,6,7,8-HpCDD | 425.3097 | 1.33E-05 | 3.94E-06 | 9.07E-06 |
| Total TCDD          | 321.9744 | 1.23E-05 | 5.51E-06 | 4.27E-06 |
| Total PeCDD         | 356.4195 | 2.51E-05 | 1.09E-05 | 1.93E-05 |
| Total HxCDD         | 390.8646 | 3.13E-05 | 1.21E-05 | 1.89E-05 |
| Total HpCDD         | 425.3097 | 3.10E-05 | 8.69E-06 | 2.36E-05 |
| OCDD                | 459.7548 | 3.17E-05 | 1.18E-05 | 2.30E-05 |
| Total PCDD          | 321.9744 | 1.64E-04 | 6.06E-05 | 1.13E-04 |

**DIOXIN EMISSIONS, lb/dscf**

|                     |          |          |          |
|---------------------|----------|----------|----------|
| 2,3,7,8-TCDD        | 4.88E-16 | 2.56E-16 | 2.74E-16 |
| 1,2,3,7,8-PeCDD     | 1.95E-15 | 8.95E-16 | 1.51E-15 |
| 1,2,3,4,7,8-HxCDD   | 1.59E-15 | 7.67E-16 | 8.23E-16 |
| 1,2,3,6,7,8-HxCDD   | 1.83E-15 | 6.39E-16 | 9.60E-16 |
| 1,2,3,7,8,9-HxCDD   | 4.03E-15 | 1.41E-15 | 2.47E-15 |
| 1,2,3,4,6,7,8-HpCDD | 1.47E-14 | 4.35E-15 | 1.00E-14 |
| Total TCDD          | 1.03E-14 | 4.60E-15 | 3.57E-15 |
| Total PeCDD         | 2.32E-14 | 1.01E-14 | 1.78E-14 |
| Total HxCDD         | 3.18E-14 | 1.23E-14 | 1.92E-14 |
| Total HpCDD         | 3.42E-14 | 9.59E-15 | 2.61E-14 |
| OCDD                | 3.79E-14 | 1.41E-14 | 2.74E-14 |
| Total PCDD          | 1.37E-13 | 5.06E-14 | 9.41E-14 |



**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

|                  | T1        | T2                           | T3        |
|------------------|-----------|------------------------------|-----------|
| Test run number  |           |                              |           |
| Test location    |           | <b>AFTERBURNER DISCHARGE</b> |           |
| Test date        | 01-31-96  | 02-02-96                     | 02-04-96  |
| Test time period | 1834-0121 | 1405-2038                    | 1410-2045 |

**DIOXIN CONCENTRATION, ng/ds cm**

|                     |          |          |          |
|---------------------|----------|----------|----------|
| 2,3,7,8-TCDD        | 7.82E-03 | 4.09E-03 | 4.39E-03 |
| 1,2,3,7,8-PeCDD     | 3.13E-02 | 1.43E-02 | 2.42E-02 |
| 1,2,3,4,7,8-HxCDD   | 2.54E-02 | 1.23E-02 | 1.32E-02 |
| 1,2,3,6,7,8-HxCDD   | 2.93E-02 | 1.02E-02 | 1.54E-02 |
| 1,2,3,7,8,9-HxCDD   | 6.45E-02 | 2.25E-02 | 3.95E-02 |
| 1,2,3,4,6,7,8-HpCDD | 2.35E-01 | 6.96E-02 | 1.60E-01 |
| Total TCDD          | 1.64E-01 | 7.37E-02 | 5.71E-02 |
| Total PeCDD         | 3.72E-01 | 1.62E-01 | 2.86E-01 |
| Total HxCDD         | 5.09E-01 | 1.97E-01 | 3.08E-01 |
| Total HpCDD         | 5.48E-01 | 1.54E-01 | 4.17E-01 |
| OCDD                | 6.06E-01 | 2.25E-01 | 4.39E-01 |
| Total PCDD          | 2.20E+00 | 8.11E-01 | 1.51E+00 |

**DIOXIN EMISSIONS, lb/hr**

|                     |          |          |          |
|---------------------|----------|----------|----------|
| 2,3,7,8-TCDD        | 3.20E-11 | 1.58E-11 | 1.62E-11 |
| 1,2,3,7,8-PeCDD     | 1.28E-10 | 5.52E-11 | 8.89E-11 |
| 1,2,3,4,7,8-HxCDD   | 1.04E-10 | 4.73E-11 | 4.85E-11 |
| 1,2,3,6,7,8-HxCDD   | 1.20E-10 | 3.94E-11 | 5.66E-11 |
| 1,2,3,7,8,9-HxCDD   | 2.64E-10 | 8.67E-11 | 1.45E-10 |
| 1,2,3,4,6,7,8-HpCDD | 9.59E-10 | 2.68E-10 | 5.90E-10 |
| Total TCDD          | 6.71E-10 | 2.84E-10 | 2.10E-10 |
| Total PeCDD         | 1.52E-09 | 6.22E-10 | 1.05E-09 |
| Total HxCDD         | 2.08E-09 | 7.56E-10 | 1.13E-09 |
| Total HpCDD         | 2.24E-09 | 5.91E-10 | 1.54E-09 |
| OCDD                | 2.48E-09 | 8.67E-10 | 1.62E-09 |
| Total PCDD          | 8.98E-09 | 3.12E-09 | 5.54E-09 |

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS**

**TEST DATA**

|                  |                              |           |           |
|------------------|------------------------------|-----------|-----------|
| Test run number  | T1                           | T2        | T3        |
| Test location    | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Test date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Test time period | 1834-0121                    | 1405-2038 | 1410-2045 |

**FURAN LABORATORY REPORT DATA, ng**

|                     |     |       |       |       |
|---------------------|-----|-------|-------|-------|
| 2,3,7,8-TCDF        | ND< | 0.007 | 0.010 | 0.010 |
| 1,2,3,7,8-PeCDF     | ND< | 0.020 | 0.010 | 0.020 |
| 2,3,4,7,8-PeCDF     | ND< | 0.020 | 0.030 | 0.020 |
| 1,2,3,4,7,8-HxCDF   |     | 0.020 | 0.040 | 0.060 |
| 1,2,3,6,7,8-HxCDF   |     | 0.010 | 0.020 | 0.030 |
| 2,3,4,6,7,8-HxCDF   |     | 0.020 | 0.030 | 0.030 |
| 1,2,3,7,8,9-HxCDF   | ND< | 0.010 | 0.020 | 0.010 |
| 1,2,3,4,6,7,8-HpCDF |     | 0.050 | 0.080 | 0.100 |
| 1,2,3,4,7,8,9-HpCDF |     | 0.010 | 0.010 | 0.020 |
| Total TCDF          |     | 0.040 | 0.140 | 0.350 |
| Total PeCDF         |     | 0.130 | 0.280 | 0.320 |
| Total HxCDF         |     | 0.160 | 0.200 | 0.280 |
| Total HpCDF         |     | 0.130 | 0.160 | 0.180 |
| OCDF                |     | 0.080 | 0.050 | 0.050 |
| Total PCDF          |     | 0.540 | 0.830 | 1.180 |

**FURAN CONCENTRATION, ppb/v**

mole wt

|                     |          |     |          |          |          |
|---------------------|----------|-----|----------|----------|----------|
| 2,3,7,8-TCDF        | 305.9750 | ND< | 1.08E-07 | 1.61E-07 | 1.73E-07 |
| 1,2,3,7,8-PeCDF     | 340.4201 | ND< | 2.76E-07 | 1.45E-07 | 3.11E-07 |
| 2,3,4,7,8-PeCDF     | 340.4201 | ND< | 2.76E-07 | 4.34E-07 | 3.11E-07 |
| 1,2,3,4,7,8-HxCDF   | 374.8652 |     | 2.51E-07 | 5.26E-07 | 8.46E-07 |
| 1,2,3,6,7,8-HxCDF   | 374.8652 |     | 1.26E-07 | 2.63E-07 | 4.23E-07 |
| 2,3,4,6,7,8-HxCDF   | 374.8652 |     | 2.51E-07 | 3.94E-07 | 4.23E-07 |
| 1,2,3,7,8,9-HxCDF   | 374.8652 | ND< | 1.26E-07 | 2.63E-07 | 1.41E-07 |
| 1,2,3,4,6,7,8-HpCDF | 409.3103 |     | 5.75E-07 | 9.63E-07 | 1.29E-06 |
| 1,2,3,4,7,8,9-HpCDF | 409.3103 |     | 1.15E-07 | 1.20E-07 | 2.58E-07 |
| Total TCDF          | 305.9750 |     | 6.15E-07 | 2.25E-06 | 6.05E-06 |
| Total PeCDF         | 340.4201 |     | 1.80E-06 | 4.05E-06 | 4.97E-06 |
| Total HxCDF         | 374.8652 |     | 2.01E-06 | 2.63E-06 | 3.95E-06 |
| Total HpCDF         | 409.3103 |     | 1.49E-06 | 1.93E-06 | 2.32E-06 |
| OCDF                | 443.7554 |     | 8.48E-07 | 5.55E-07 | 5.96E-07 |
| Total PCDF          | 305.9750 |     | 8.31E-06 | 1.34E-05 | 2.04E-05 |

**FURAN EMISSIONS, lb/dscf**

|                     |     |          |          |          |
|---------------------|-----|----------|----------|----------|
| 2,3,7,8-TCDF        | ND< | 8.55E-17 | 1.28E-16 | 1.37E-16 |
| 1,2,3,7,8-PeCDF     | ND< | 2.44E-16 | 1.28E-16 | 2.74E-16 |
| 2,3,4,7,8-PeCDF     | ND< | 2.44E-16 | 3.83E-16 | 2.74E-16 |
| 1,2,3,4,7,8-HxCDF   |     | 2.44E-16 | 5.11E-16 | 8.23E-16 |
| 1,2,3,6,7,8-HxCDF   |     | 1.22E-16 | 2.56E-16 | 4.11E-16 |
| 2,3,4,6,7,8-HxCDF   |     | 2.44E-16 | 3.83E-16 | 4.11E-16 |
| 1,2,3,7,8,9-HxCDF   | ND< | 1.22E-16 | 2.56E-16 | 1.37E-16 |
| 1,2,3,4,6,7,8-HpCDF |     | 6.11E-16 | 1.02E-15 | 1.37E-15 |
| 1,2,3,4,7,8,9-HpCDF |     | 1.22E-16 | 1.28E-16 | 2.74E-16 |
| Total TCDF          |     | 4.88E-16 | 1.79E-15 | 4.80E-15 |
| Total PeCDF         |     | 1.59E-15 | 3.58E-15 | 4.39E-15 |
| Total HxCDF         |     | 1.95E-15 | 2.56E-15 | 3.84E-15 |
| Total HpCDF         |     | 1.59E-15 | 2.05E-15 | 2.47E-15 |
| OCDF                |     | 9.77E-16 | 6.39E-16 | 6.86E-16 |
| Total PCDF          |     | 6.59E-15 | 1.06E-14 | 1.62E-14 |

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS**

| TEST DATA                            | AFTERBURNER DISCHARGE |              |              |
|--------------------------------------|-----------------------|--------------|--------------|
|                                      | T1                    | T2           | T3           |
| Test run number                      | 01-31-96              | 02-02-96     | 02-04-96     |
| Test location                        | 1834-0121             | 1405-2038    | 1410-2045    |
| Test date                            |                       |              |              |
| Test time period                     |                       |              |              |
| <b>FURAN CONCENTRATIONS, ng/dscm</b> |                       |              |              |
| 2,3,7,8-TCDF                         | ND< 1.37E-03          | 2.05E-03     | 2.20E-03     |
| 1,2,3,7,8-PeCDF                      | ND< 3.91E-03          | 2.05E-03     | 4.39E-03     |
| 2,3,4,7,8-PeCDF                      | ND< 3.91E-03          | 6.14E-03     | 4.39E-03     |
| 1,2,3,4,7,8-HxCDF                    | 3.91E-03              | 8.19E-03     | 1.32E-02     |
| 1,2,3,6,7,8-HxCDF                    | 1.96E-03              | 4.09E-03     | 6.59E-03     |
| 1,2,3,4,6,7,8-HxCDF                  | 3.91E-03              | 6.14E-03     | 6.59E-03     |
| 2,3,4,6,7,8-HxCDF                    | ND< 1.96E-03          | ND< 4.09E-03 | ND< 2.20E-03 |
| 1,2,3,7,8,9-HxCDF                    | 9.78E-03              | 1.64E-02     | 2.20E-02     |
| 1,2,3,4,6,7,8-HpCDF                  | 1.96E-03              | 2.05E-03     | 4.39E-03     |
| 1,2,3,4,7,8,9-HpCDF                  |                       |              |              |
| Total TCDF                           | 7.82E-03              | 2.87E-02     | 7.69E-02     |
| Total PeCDF                          | 2.54E-02              | 5.73E-02     | 7.03E-02     |
| Total HxCDF                          | 3.13E-02              | 4.09E-02     | 6.15E-02     |
| Total HpCDF                          | 2.54E-02              | 3.28E-02     | 3.95E-02     |
| OCDF                                 | 1.56E-02              | 1.02E-02     | 1.10E-02     |
| Total PCDF                           | 1.06E-01              | 1.70E-01     | 2.59E-01     |
| <b>FURAN EMISSIONS, lb/hr</b>        |                       |              |              |
| 2,3,7,8-TCDF                         | ND< 5.59E-12          | 7.88E-12     | 8.08E-12     |
| 1,2,3,7,8-PeCDF                      | ND< 1.60E-11          | 7.88E-12     | 1.62E-11     |
| 2,3,4,7,8-PeCDF                      | ND< 1.60E-11          | 2.36E-11     | 1.62E-11     |
| 1,2,3,4,7,8-HxCDF                    | 1.60E-11              | 3.15E-11     | 4.85E-11     |
| 1,2,3,6,7,8-HxCDF                    | 7.99E-12              | 1.58E-11     | 2.42E-11     |
| 1,2,3,4,6,7,8-HxCDF                  | 1.60E-11              | 2.36E-11     | 2.42E-11     |
| 1,2,3,7,8,9-HxCDF                    | ND< 7.99E-12          | ND< 1.58E-11 | ND< 8.08E-12 |
| 1,2,3,4,6,7,8-HpCDF                  | 3.99E-11              | 6.30E-11     | 8.08E-11     |
| 1,2,3,4,7,8,9-HpCDF                  | 7.99E-12              | 7.88E-12     | 1.62E-11     |
| Total TCDF                           | 3.20E-11              | 1.10E-10     | 2.83E-10     |
| Total PeCDF                          | 1.04E-10              | 2.21E-10     | 2.59E-10     |
| Total HxCDF                          | 1.28E-10              | 1.58E-10     | 2.26E-10     |
| Total HpCDF                          | 1.04E-10              | 1.26E-10     | 1.45E-10     |
| OCDF                                 | 6.39E-11              | 3.94E-11     | 4.04E-11     |
| Total PCDF                           | 4.31E-10              | 6.54E-10     | 9.53E-10     |

TOXICITY EQUIVALENCY FACTORS (TEFs/89)

|                     |       |       |       |
|---------------------|-------|-------|-------|
| 2,3,7,8-TCDD        | 1     | 1     | 1     |
| 1,2,3,7,8-PeCDD     | 0.5   | 0.5   | 0.5   |
| 1,2,3,4,7,8-HxCDD   | 0.1   | 0.1   | 0.1   |
| 1,2,3,6,7,8-HxCDD   | 0.1   | 0.1   | 0.1   |
| 1,2,3,7,8,9-HxCDD   | 0.1   | 0.1   | 0.1   |
| 1,2,3,4,6,7,8-HpCDD | 0.01  | 0.01  | 0.01  |
| Total TCDD          | 0     | 0     | 0     |
| Total PeCDD         | 0     | 0     | 0     |
| Total HxCDD         | 0     | 0     | 0     |
| Total HpCDD         | 0     | 0     | 0     |
| OCDD                | 0.001 | 0.001 | 0.001 |
| 2,3,7,8-TCDF        | 0.1   | 0.1   | 0.1   |
| 1,2,3,7,8-PeCDF     | 0.05  | 0.05  | 0.05  |
| 2,3,4,7,8-PeCDF     | 0.5   | 0.5   | 0.5   |
| 1,2,3,4,7,8-HxCDF   | 0.1   | 0.1   | 0.1   |
| 1,2,3,6,7,8-HxCDF   | 0.1   | 0.1   | 0.1   |
| 2,3,4,6,7,8-HxCDF   | 0.1   | 0.1   | 0.1   |
| 1,2,3,7,8,9-HxCDF   | 0.1   | 0.1   | 0.1   |
| 1,2,3,4,6,7,8-HpCDF | 0.01  | 0.01  | 0.01  |
| 1,2,3,4,7,8,9-HpCDF | 0.01  | 0.01  | 0.01  |
| Total TCDF          | 0     | 0     | 0     |
| Total PeCDF         | 0     | 0     | 0     |
| Total HxCDF         | 0     | 0     | 0     |
| Total HpCDF         | 0     | 0     | 0     |
| OCDF                | 0.001 | 0.001 | 0.001 |

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |
|-----------------|-----------|-----------|-----------|-----------|
| Test run number | 1         | 1         | 1         | 1         |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    |
| Test date       | 01-31-96  | 01-31-96  | 01-31-96  | 01-31-96  |
| Test time       | 1846-1926 | 2052-2132 | 2153-2233 | 2242-2322 |
| Test tube pair  | 1         | 3         | 4         | 5         |

**SAMPLING DATA:**

|                                                   |        |        |        |        |
|---------------------------------------------------|--------|--------|--------|--------|
| Duration, minutes                                 | 40.00  | 40.00  | 40.00  | 40.00  |
| Average dry gas meter press. in. H <sub>2</sub> O | 1.39   | 1.40   | 1.40   | 1.30   |
| Average dry gas meter temp. deg. C                | 9.81   | 11.12  | 11.00  | 11.00  |
| Average dry gas meter temp. deg. F                | 49.66  | 52.02  | 51.80  | 51.80  |
| Average absolute meter temp. deg. R               | 509.66 | 512.02 | 511.80 | 511.80 |
| Actual sample volume, liters                      | 21.440 | 22.693 | 21.385 | 20.763 |
| Meter box calibration, Y                          | 1.0060 | 1.0060 | 1.0060 | 1.0060 |
| Barometric pressure, in. Hg                       | 29.73  | 29.73  | 29.73  | 29.73  |
| Sample volume, dscf                               | 0.7865 | 0.8287 | 0.7812 | 0.7583 |
| Volumetric flow rate, dscf/min <sup>(1)</sup>     | 1000   | 1000   | 1000   | 1000   |

**LABORATORY DATA, ng:**

|                                 | M.W.   |             |  |            |            |            |
|---------------------------------|--------|-------------|--|------------|------------|------------|
| Chloromethane (Methyl Chloride) | 50.49  | 1000.000    |  | 2200.000 E | 5500.000 E | 3900.000 E |
| Bromomethane (Methyl Bromide)   | 94.95  | 81.000 JB   |  | 530.000    | 120.000    | 400.000    |
| Vinyl Chloride                  | 62.50  | 100.000 U   |  | 100.000 U  | 100.000 U  | 100.000 U  |
| Chloroethane (Ethyl Chloride)   | 64.52  | 100.000 U   |  | 100.000 U  | 100.000 U  | 100.000 U  |
| Methylene chloride              | 84.93  | 99.463 JB   |  | 86.257 JB  | 68.239 JB  | 57.264 JB  |
| Acetone                         | 58.09  | 24667.707 E |  | 1682.057   | 2265.912   | 2568.114   |
| Carbon Disulfide                | 76.13  | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,1-Dichloroethene              | 96.94  | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,1-Dichloroethane              | 98.96  | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,2-Dichloroethene (trans)      | 96.94  | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Chloroform                      | 119.37 | 20.078 J    |  | 21.154 J   | 19.943 J   | 19.359 J   |
| 1,2-Dichloroethane (EDC)        | 98.96  | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| 2-Butanone (MEK)                | 72.12  | 1000.000 U  |  | 1000.000 U | 1000.000 U | 1000.000 U |
| 1,1,1-Trichloroethane (TCA)     | 133.40 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Carbon Tetrachloride            | 153.81 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Vinyl acetate                   | 86.09  | 200.000 U   |  | 200.000 U  | 200.000 U  | 200.000 U  |
| Bromodichloromethane            | 163.83 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,2-Dichloropropane             | 112.99 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| cis-1,3-Dichloropropene         | 110.98 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Trichloroethene (TCE)           | 131.38 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Dibromochloromethane            | 208.29 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,1,2-Trichloroethane           | 133.40 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Benzene                         | 78.12  | 99.000 JB   |  | 46.000 JB  | 68.000 JB  | 67.000 JB  |
| trans-1,3-Dichloropropene       | 110.98 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Bromoform                       | 252.75 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| 4-Methyl-2-Pentanone (MIBK)     | 100.18 | 1000.000 U  |  | 1000.000 U | 1000.000 U | 1000.000 U |
| 2-Hexanone                      | 100.18 | 1000.000 U  |  | 1000.000 U | 1000.000 U | 1000.000 U |
| Tetrachloroethene (PCE)         | 165.82 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,1,2,2-Tetrachloroethane       | 167.84 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Toluene                         | 92.15  | 50.000 JB   |  | 32.000 JB  | 44.000 JB  | 35.000 JB  |
| Chlorobenzene                   | 112.56 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Ethylbenzene                    | 106.18 | 50.000 U    |  | 50.000 U   | 50.000 U   | 50.000 U   |
| Styrene                         | 104.16 | 17.000 J    |  | 6.000 J    | 12.000 J   | 9.000 J    |
| Xylenes (total)                 | 106.18 | 38.000      |  | 13.000 J   | 28.000     | 29.000 J   |
| 2-Chloroethyl vinyl ether       | 106.55 | 200.000 U   |  | 200.000 U  | 200.000 U  | 200.000 U  |

U = detection limit value.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

B = Compound also detected in blank. Reported values are not blank corrected.

(1) Volumetric flow rate based on average of Particulate/HCl and MMTL tests flow measurements.

NOTE: Data from test tube pairs 2 and 6 not available due to instrument failure during analysis.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |             |
|-----------------|-----------|-----------|-----------|-----------|-------------|
| Test run number | 1         | 1         | 1         | 1         | 1           |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 01-31-96  | 01-31-96  | 01-31-96  | 01-31-96  |             |
| Test time       | 1846-1926 | 2052-2132 | 2153-2233 | 2242-2322 |             |
| Test tube pair  | 1         | 3         | 4         | 5         | AVERAGE (2) |

**VOST EMISSIONS (lbs/dscf):**

|                                 |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 2.80E-09    | 5.85E-09 E  | 1.55E-08 E  | 1.13E-08 E  | 8.88E-09   |
| Bromomethane (Methyl Bromide)   | 2.27E-10 JB | 1.41E-09    | 3.39E-10    | 1.16E-09    | 7.85E-10   |
| Vinyl Chloride                  | < 2.80E-10  | < 2.66E-10  | < 2.82E-10  | < 2.91E-10  | < 2.80E-10 |
| Chloroethane (Ethyl Chloride)   | < 2.80E-10  | < 2.66E-10  | < 2.82E-10  | < 2.91E-10  | < 2.80E-10 |
| Methylene chloride              | 2.79E-10 JB | 2.29E-10 JB | 1.93E-10 JB | 1.66E-10 JB | 2.17E-10   |
| Acetone                         | 6.91E-08 E  | 4.48E-09    | 6.39E-09    | 7.47E-09    | 2.19E-08   |
| Carbon Disulfide                | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| 1,1-Dichloroethene              | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| 1,1-Dichloroethane              | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| 1,2-Dichloroethene (trans)      | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Chloroform                      | 5.63E-11 J  | 5.63E-11 J  | 5.63E-11 J  | 5.63E-11 J  | 5.63E-11   |
| 1,2-Dichloroethane (EDC)        | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| 2-Butanone (MEK)                | < 2.80E-09  | < 2.66E-09  | < 2.82E-09  | < 2.91E-09  | < 2.80E-09 |
| 1,1,1-Trichloroethane (TCA)     | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Carbon Tetrachloride            | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Vinyl acetate                   | < 5.61E-10  | < 5.32E-10  | < 5.64E-10  | < 5.81E-10  | < 5.60E-10 |
| Bromodichloromethane            | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| 1,2-Dichloropropane             | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| cis-1,3-Dichloropropene         | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Trichloroethene (TCE)           | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Dibromochloromethane            | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| 1,1,2-Trichloroethane           | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Benzene                         | 2.78E-10 JB | 1.22E-10 JB | 1.92E-10 JB | 1.95E-10 JB | 1.97E-10   |
| trans-1,3-Dichloropropene       | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Bromoform                       | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| 4-Methyl-2-Pentanone (MIBK)     | < 2.80E-09  | < 2.66E-09  | < 2.82E-09  | < 2.91E-09  | < 2.80E-09 |
| 2-Hexanone                      | < 2.80E-09  | < 2.66E-09  | < 2.82E-09  | < 2.91E-09  | < 2.80E-09 |
| Tetrachloroethene (PCE)         | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| 1,1,2,2-Tetrachloroethane       | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Toluene                         | 1.40E-10 JB | 8.51E-11 JB | 1.24E-10 JB | 1.02E-10 JB | 1.13E-10   |
| Chlorobenzene                   | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Ethylbenzene                    | < 1.40E-10  | < 1.33E-10  | < 1.41E-10  | < 1.45E-10  | < 1.40E-10 |
| Styrene                         | 4.77E-11 J  | 1.60E-11 J  | 3.39E-11 J  | 2.62E-11 J  | 3.09E-11   |
| Xylenes (total)                 | 1.07E-10    | 3.46E-11 J  | 7.90E-11    | 8.43E-11 J  | 7.61E-11   |
| 2-Chloroethyl vinyl ether       | < 5.61E-10  | < 5.32E-10  | < 5.64E-10  | < 5.81E-10  | < 5.60E-10 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

| Test run number | 1         | 1         | 1         | 1         | 1           |
|-----------------|-----------|-----------|-----------|-----------|-------------|
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 01-31-96  | 01-31-96  | 01-31-96  | 01-31-96  |             |
| Test time       | 1846-1926 | 2052-2132 | 2153-2233 | 2242-2322 |             |
| Test tube pair  | 1         | 3         | 4         | 5         | AVERAGE (2) |

**VOST EMISSIONS (ug/dscm):**

|                                 |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 4.49E+01    | 9.37E+01 E  | 2.49E+02 E  | 1.82E+02 E  | 1.42E+02   |
| Bromomethane (Methyl Bromide)   | 3.64E+00 JB | 2.26E+01    | 5.42E+00    | 1.86E+01    | 1.26E+01   |
| Vinyl Chloride                  | < 4.49E+00  | < 4.26E+00  | < 4.52E+00  | < 4.66E+00  | < 4.48E+00 |
| Chloroethane (Ethyl Chloride)   | < 4.49E+00  | < 4.26E+00  | < 4.52E+00  | < 4.66E+00  | < 4.48E+00 |
| Methylene chloride              | 4.47E+00 JB | 3.68E+00 JB | 3.08E+00 JB | 2.67E+00 JB | 3.47E+00   |
| Acetone                         | 1.11E+03 E  | 7.17E+01    | 1.02E+02    | 1.20E+02    | 3.50E+02   |
| Carbon Disulfide                | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| 1,1-Dichloroethane              | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| 1,1-Dichloroethane              | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| 1,2-Dichloroethane (trans)      | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Chloroform                      | 9.01E-01 J  | 9.01E-01 J  | 9.01E-01 J  | 9.01E-01 J  | 9.01E-01   |
| 1,2-Dichloroethane (EDC)        | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| 2-Butanone (MEK)                | < 4.49E+01  | < 4.26E+01  | < 4.52E+01  | < 4.66E+01  | < 4.48E+01 |
| 1,1,1-Trichloroethane (TCA)     | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Carbon Tetrachloride            | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Vinyl acetate                   | < 8.98E+00  | < 8.52E+00  | < 9.04E+00  | < 9.31E+00  | < 8.96E+00 |
| Bromodichloromethane            | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| 1,2-Dichloropropane             | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| cis-1,3-Dichloropropene         | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Trichloroethene (TCE)           | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Dibromochloromethane            | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| 1,1,2-Trichloroethane           | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Benzene                         | 4.44E+00 JB | 1.96E+00 JB | 3.07E+00 JB | 3.12E+00 JB | 3.15E+00   |
| trans-1,3-Dichloropropene       | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Bromoform                       | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| 4-Methyl-2-Pentanone (MIBK)     | < 4.49E+01  | < 4.26E+01  | < 4.52E+01  | < 4.66E+01  | < 4.48E+01 |
| 2-Hexanone                      | < 4.49E+01  | < 4.26E+01  | < 4.52E+01  | < 4.66E+01  | < 4.48E+01 |
| Tetrachloroethene (PCE)         | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| 1,1,2,2-Tetrachloroethane       | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Toluene                         | 2.24E+00 JB | 1.36E+00 JB | 1.99E+00 JB | 1.63E+00 JB | 1.81E+00   |
| Chlorobenzene                   | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Ethylbenzene                    | < 2.24E+00  | < 2.13E+00  | < 2.26E+00  | < 2.33E+00  | < 2.24E+00 |
| Styrene                         | 7.63E-01 J  | 2.56E-01 J  | 5.42E-01 J  | 4.19E-01 J  | 4.95E-01   |
| Xylenes (total)                 | 1.71E+00    | 5.54E-01 J  | 1.27E+00    | 1.35E+00 J  | 1.22E+00   |
| 2-Chloroethyl vinyl ether       | < 8.98E+00  | < 8.52E+00  | < 9.04E+00  | < 9.31E+00  | < 8.96E+00 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |             |
|-----------------|-----------|-----------|-----------|-----------|-------------|
| Test run number | 1         | 1         | 1         | 1         | 1           |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 01-31-96  | 01-31-96  | 01-31-96  | 01-31-96  |             |
| Test time       | 1846-1926 | 2052-2132 | 2153-2233 | 2242-2322 |             |
| Test tube pair  | 1         | 3         | 4         | 5         | AVERAGE (2) |

**VOST EMISSIONS (ppm/v):**

|                                 |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 2.14E-02    | 4.47E-02 E  | 1.18E-01 E  | 8.65E-02 E  | 6.78E-02   |
| Bromomethane (Methyl Bromide)   | 9.21E-04 JB | 5.72E-03    | 1.37E-03    | 4.72E-03    | 3.18E-03   |
| Vinyl Chloride                  | < 1.73E-03  | < 1.64E-03  | < 1.74E-03  | < 1.79E-03  | < 1.73E-03 |
| Chloroethane (Ethyl Chloride)   | < 1.67E-03  | < 1.59E-03  | < 1.69E-03  | < 1.74E-03  | < 1.67E-03 |
| Methylene chloride              | 1.27E-03 JB | 1.04E-03 JB | 8.74E-04 JB | 7.55E-04 JB | 9.84E-04   |
| Acetone                         | 4.59E-01 E  | 2.97E-02    | 4.24E-02    | 4.95E-02    | 1.45E-01   |
| Carbon Disulfide                | < 7.09E-04  | < 6.73E-04  | < 7.14E-04  | < 7.36E-04  | < 7.08E-04 |
| 1,1-Dichloroethene              | < 5.57E-04  | < 5.29E-04  | < 5.61E-04  | < 5.78E-04  | < 5.56E-04 |
| 1,1-Dichloroethane              | < 5.46E-04  | < 5.18E-04  | < 5.49E-04  | < 5.66E-04  | < 5.45E-04 |
| 1,2-Dichloroethene (trans)      | < 5.57E-04  | < 5.29E-04  | < 5.61E-04  | < 5.78E-04  | < 5.56E-04 |
| Chloroform                      | 1.82E-04 J  | 1.82E-04 J  | 1.82E-04 J  | 1.82E-04 J  | 1.82E-04   |
| 1,2-Dichloroethane (EDC)        | < 5.46E-04  | < 5.18E-04  | < 5.49E-04  | < 5.66E-04  | < 5.45E-04 |
| 2-Butanone (MEK)                | < 1.50E-02  | < 1.42E-02  | < 1.51E-02  | < 1.55E-02  | < 1.50E-02 |
| 1,1,1-Trichloroethane (TCA)     | < 4.05E-04  | < 3.84E-04  | < 4.08E-04  | < 4.20E-04  | < 4.04E-04 |
| Carbon Tetrachloride            | < 3.51E-04  | < 3.33E-04  | < 3.54E-04  | < 3.64E-04  | < 3.51E-04 |
| Vinyl acetate                   | < 2.51E-03  | < 2.38E-03  | < 2.53E-03  | < 2.60E-03  | < 2.51E-03 |
| Bromodichloromethane            | < 3.30E-04  | < 3.13E-04  | < 3.32E-04  | < 3.42E-04  | < 3.29E-04 |
| 1,2-Dichloropropane             | < 4.78E-04  | < 4.54E-04  | < 4.81E-04  | < 4.96E-04  | < 4.77E-04 |
| cis-1,3-Dichloropropene         | < 4.87E-04  | < 4.62E-04  | < 4.90E-04  | < 5.05E-04  | < 4.86E-04 |
| Trichloroethene (TCE)           | < 4.11E-04  | < 3.90E-04  | < 4.14E-04  | < 4.26E-04  | < 4.10E-04 |
| Dibromochloromethane            | < 2.59E-04  | < 2.46E-04  | < 2.61E-04  | < 2.69E-04  | < 2.59E-04 |
| 1,1,2-Trichloroethane           | < 4.05E-04  | < 3.84E-04  | < 4.08E-04  | < 4.20E-04  | < 4.04E-04 |
| Benzene                         | 1.37E-03 JB | 6.04E-04 JB | 9.47E-04 JB | 9.61E-04 JB | 9.70E-04   |
| trans-1,3-Dichloropropene       | < 4.87E-04  | < 4.62E-04  | < 4.90E-04  | < 5.05E-04  | < 4.86E-04 |
| Bromoform                       | < 2.14E-04  | < 2.03E-04  | < 2.15E-04  | < 2.22E-04  | < 2.13E-04 |
| 4-Methyl-2-Pentanone (MIBK)     | < 1.08E-02  | < 1.02E-02  | < 1.09E-02  | < 1.12E-02  | < 1.08E-02 |
| 2-Hexanone                      | < 1.08E-02  | < 1.02E-02  | < 1.09E-02  | < 1.12E-02  | < 1.08E-02 |
| Tetrachloroethene (PCE)         | < 3.26E-04  | < 3.09E-04  | < 3.28E-04  | < 3.38E-04  | < 3.25E-04 |
| 1,1,2,2-Tetrachloroethane       | < 3.22E-04  | < 3.05E-04  | < 3.24E-04  | < 3.34E-04  | < 3.21E-04 |
| Toluene                         | 5.86E-04 JB | 3.56E-04 JB | 5.19E-04 JB | 4.26E-04 JB | 4.72E-04   |
| Chlorobenzene                   | < 4.80E-04  | < 4.55E-04  | < 4.83E-04  | < 4.98E-04  | < 4.79E-04 |
| Ethylbenzene                    | < 5.09E-04  | < 4.83E-04  | < 5.12E-04  | < 5.28E-04  | < 5.08E-04 |
| Styrene                         | 1.76E-04 J  | 5.91E-05 J  | 1.25E-04 J  | 9.68E-05 J  | 1.14E-04   |
| Xylenes (total)                 | 3.87E-04    | 1.26E-04 J  | 2.87E-04    | 3.06E-04 J  | 2.76E-04   |
| 2-Chloroethyl vinyl ether       | < 2.03E-03  | < 1.92E-03  | < 2.04E-03  | < 2.10E-03  | < 2.02E-03 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.



**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |             |
|-----------------|-----------|-----------|-----------|-----------|-------------|
| Test run number | 1         | 1         | 1         | 1         | 1           |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 01-31-96  | 01-31-96  | 01-31-96  | 01-31-96  |             |
| Test time       | 1846-1926 | 2052-2132 | 2153-2233 | 2242-2322 |             |
| Test tube pair  | 1         | 3         | 4         | 5         | AVERAGE (2) |

**VOST EMISSIONS (lb/hr):**

|                                 |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 1.68E-04    | 3.51E-04 E  | 9.31E-04 E  | 6.80E-04 E  | 5.33E-04   |
| Bromomethane (Methyl Bromide)   | 1.36E-05 JB | 8.46E-05    | 2.03E-05    | 6.98E-05    | 4.71E-05   |
| Vinyl Chloride                  | < 1.68E-05  | < 1.60E-05  | < 1.69E-05  | < 1.74E-05  | < 1.68E-05 |
| Chloroethane (Ethyl Chloride)   | < 1.68E-05  | < 1.60E-05  | < 1.69E-05  | < 1.74E-05  | < 1.68E-05 |
| Methylene chloride              | 1.67E-05 JB | 1.38E-05 JB | 1.16E-05 JB | 9.99E-06 JB | 1.30E-05   |
| Acetone                         | 4.15E-03 E  | 2.69E-04    | 3.84E-04    | 4.48E-04    | 1.31E-03   |
| Carbon Disulfide                | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| 1,1-Dichloroethane              | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| 1,1-Dichloroethane              | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| 1,2-Dichloroethane (trans)      | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Chloroform                      | 3.38E-06 J  | 3.38E-06 J  | 3.38E-06 J  | 3.38E-06 J  | 3.38E-06   |
| 1,2-Dichloroethane (EDC)        | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| 2-Butanone (MEK)                | < 1.68E-04  | < 1.60E-04  | < 1.69E-04  | < 1.74E-04  | < 1.68E-04 |
| 1,1,1-Trichloroethane (TCA)     | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Carbon Tetrachloride            | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Vinyl acetate                   | < 3.36E-05  | < 3.19E-05  | < 3.39E-05  | < 3.49E-05  | < 3.36E-05 |
| Bromodichloromethane            | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| 1,2-Dichloropropane             | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| cis-1,3-Dichloropropene         | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Trichloroethene (TCE)           | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Dibromochloromethane            | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| 1,1,2-Trichloroethane           | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Benzene                         | 1.67E-05 JB | 7.34E-06 JB | 1.15E-05 JB | 1.17E-05 JB | 1.18E-05   |
| trans-1,3-Dichloropropene       | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Bromoform                       | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| 4-Methyl-2-Pentanone (MIBK)     | < 1.68E-04  | < 1.60E-04  | < 1.69E-04  | < 1.74E-04  | < 1.68E-04 |
| 2-Hexanone                      | < 1.68E-04  | < 1.60E-04  | < 1.69E-04  | < 1.74E-04  | < 1.68E-04 |
| Tetrachloroethene (PCE)         | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| 1,1,2,2-Tetrachloroethane       | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Toluene                         | 8.41E-06 JB | 5.11E-06 JB | 7.45E-06 JB | 6.11E-06 JB | 6.77E-06   |
| Chlorobenzene                   | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Ethylbenzene                    | < 8.41E-06  | < 7.98E-06  | < 8.47E-06  | < 8.72E-06  | < 8.39E-06 |
| Styrene                         | 2.86E-06 J  | 9.58E-07 J  | 2.03E-06 J  | 1.57E-06 J  | 1.85E-06   |
| Xylenes (total)                 | 6.39E-06    | 2.08E-06 J  | 4.74E-06    | 5.06E-06 J  | 4.57E-06   |
| 2-Chloroethyl vinyl ether       | < 3.36E-05  | < 3.19E-05  | < 3.39E-05  | < 3.49E-05  | < 3.36E-05 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |             |
|-----------------|-----------|-----------|-----------|-----------|-------------|
| Test run number | 1         | 1         | 1         | 1         | 1           |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 01-31-96  | 01-31-96  | 01-31-96  | 01-31-96  |             |
| Test time       | 1846-1926 | 2052-2132 | 2153-2233 | 2242-2322 |             |
| Test tube pair  | 1         | 3         | 4         | 5         | AVERAGE (2) |

**VOST EMISSIONS (g/sec):**

|                                 |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 2.12E-05    | 4.42E-05 E  | 1.17E-04 E  | 8.57E-05 E  | 6.71E-05   |
| Bromomethane (Methyl Bromide)   | 1.72E-06 JB | 1.07E-05    | 2.56E-06    | 8.79E-06    | 5.93E-06   |
| Vinyl Chloride                  | < 2.12E-06  | < 2.01E-06  | < 2.13E-06  | < 2.20E-06  | < 2.12E-06 |
| Chloroethane (Ethyl Chloride)   | < 2.12E-06  | < 2.01E-06  | < 2.13E-06  | < 2.20E-06  | < 2.12E-06 |
| Methylene chloride              | 2.11E-06 JB | 1.73E-06 JB | 1.46E-06 JB | 1.26E-06 JB | 1.64E-06   |
| Acetone                         | 5.23E-04 E  | 3.38E-05    | 4.83E-05    | 5.64E-05    | 1.65E-04   |
| Carbon Disulfide                | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| 1,1-Dichloroethene              | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| 1,1-Dichloroethane              | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| 1,2-Dichloroethene (trans)      | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Chloroform                      | 4.25E-07 J  | 4.25E-07 J  | 4.25E-07 J  | 4.25E-07 J  | 4.25E-07   |
| 1,2-Dichloroethane (EDC)        | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| 2-Butanone (MEK)                | < 2.12E-05  | < 2.01E-05  | < 2.13E-05  | < 2.20E-05  | < 2.12E-05 |
| 1,1,1-Trichloroethane (TCA)     | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Carbon Tetrachloride            | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Vinyl acetate                   | < 4.24E-06  | < 4.02E-06  | < 4.27E-06  | < 4.40E-06  | < 4.23E-06 |
| Bromodichloromethane            | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| 1,2-Dichloropropane             | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| cis-1,3-Dichloropropene         | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Trichloroethene (TCE)           | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Dibromochloromethane            | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| 1,1,2-Trichloroethane           | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Benzene                         | 2.10E-06 JB | 9.25E-07 JB | 1.45E-06 JB | 1.47E-06 JB | 1.49E-06   |
| trans-1,3-Dichloropropene       | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Bromoform                       | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| 4-Methyl-2-Pentanone (MIBK)     | < 2.12E-05  | < 2.01E-05  | < 2.13E-05  | < 2.20E-05  | < 2.12E-05 |
| 2-Hexanone                      | < 2.12E-05  | < 2.01E-05  | < 2.13E-05  | < 2.20E-05  | < 2.12E-05 |
| Tetrachloroethene (PCE)         | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| 1,1,2,2-Tetrachloroethane       | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Toluene                         | 1.06E-06 JB | 6.44E-07 JB | 9.39E-07 JB | 7.69E-07 JB | 8.53E-07   |
| Chlorobenzene                   | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Ethylbenzene                    | < 1.06E-06  | < 1.01E-06  | < 1.07E-06  | < 1.10E-06  | < 1.06E-06 |
| Styrene                         | 3.60E-07 J  | 1.21E-07 J  | 2.56E-07 J  | 1.98E-07 J  | 2.34E-07   |
| Xylenes (total)                 | 8.05E-07    | 2.61E-07 J  | 5.97E-07    | 6.37E-07 J  | 5.75E-07   |
| 2-Chloroethyl vinyl ether       | < 4.24E-06  | < 4.02E-06  | < 4.27E-06  | < 4.40E-06  | < 4.23E-06 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |           |           |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Test run number | 2         | 2         | 2         | 2         | 2         | 2         |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    |
| Test date       | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  |
| Test time       | 1419-1459 | 1542-1622 | 1628-1708 | 1730-1810 | 1825-1914 | 1925-2005 |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         |

**SAMPLING DATA:**

|                                                   |        |        |        |        |        |        |
|---------------------------------------------------|--------|--------|--------|--------|--------|--------|
| Duration, minutes                                 | 40.00  | 40.00  | 40.00  | 40.00  | 40.00  | 40.00  |
| Average dry gas meter press. in. H <sub>2</sub> O | 1.40   | 1.40   | 1.40   | 1.40   | 1.40   | 1.44   |
| Average dry gas meter temp. deg. C                | 7.63   | 9.00   | 9.44   | 10.00  | 10.00  | 10.00  |
| Average dry gas meter temp. deg. F                | 45.73  | 48.20  | 48.99  | 50.00  | 50.00  | 50.00  |
| Average absolute meter temp. deg. R               | 505.73 | 508.20 | 508.99 | 510.00 | 510.00 | 510.00 |
| Actual sample volume, liters                      | 21.930 | 21.491 | 21.148 | 21.265 | 21.755 | 22.222 |
| Meter box calibration, Y                          | 1.0060 | 1.0060 | 1.0060 | 1.0060 | 1.0060 | 1.0060 |
| Barometric pressure, in. Hg                       | 29.59  | 29.59  | 29.59  | 29.59  | 29.59  | 29.59  |
| Sample volume, dscf                               | 0.8069 | 0.7869 | 0.7732 | 0.7759 | 0.7938 | 0.8109 |
| Volumetric flow rate, dscf/min (1)                | 975    | 975    | 975    | 975    | 975    | 975    |

**LABORATORY DATA, ng**

|                                 | M.W.   |            |            |            |            |            |            |
|---------------------------------|--------|------------|------------|------------|------------|------------|------------|
| Chloromethane (Methyl Chloride) | 50.49  | 260.000    | 2000.000 E | 760.000    | 390.000    | 360.000    | 690.000    |
| Bromomethane (Methyl Bromide)   | 94.95  | 68.000     | 180.000    | 93.000     | 85.000     | 73.000     | 150.000    |
| Vinyl Chloride                  | 62.50  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  |
| Chloroethane (Ethyl Chloride)   | 64.52  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  |
| Methylene chloride              | 84.93  | 52.597 JB  | 76.260 JB  | 94.028 JB  | 90.074 JB  | 63.376 JB  | 75.664 JB  |
| Acetone                         | 58.09  | 3517.553   | 9312.164   | 2648.453 J | 3579.191 J | 3314.012   | 3518.628   |
| Carbon Disulfide                | 76.13  | 8.000 J    | 50.000 U   | 50.000 U   | 7.000 J    | 9.000 J    | 10.000 J   |
| 1,1-Dichloroethene              | 96.94  | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,1-Dichloroethane              | 98.96  | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,2-Dichloroethene (trans)      | 96.94  | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Chloroform                      | 119.37 | 20.396 J   | 19.890 J   | 19.542 J   | 19.612 J   | 20.064 J   | 20.496 J   |
| 1,2-Dichloroethane (EDC)        | 98.96  | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| 2-Butanone (MEK)                | 72.12  | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U |
| 1,1,1-Trichloroethane (TCA)     | 133.40 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Carbon Tetrachloride            | 153.81 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Vinyl acetate                   | 86.09  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  |
| Bromodichloromethane            | 163.83 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,2-Dichloropropane             | 112.99 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| cis-1,3-Dichloropropene         | 110.98 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Trichloroethene (TCE)           | 131.38 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Dibromochloromethane            | 208.29 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,1,2-Trichloroethane           | 133.40 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Benzene                         | 78.12  | 24.000 JB  | 17.000 JB  | 10.000 JB  | 30.000 JB  | 18.000 JB  | 20.000 JB  |
| trans-1,3-Dichloropropene       | 110.98 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Bromoform                       | 252.75 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| 4-Methyl-2-Pentanone (MIBK)     | 100.18 | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U |
| 2-Hexanone                      | 100.18 | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U |
| Tetrachloroethene (PCE)         | 165.82 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| 1,1,2,2-Tetrachloroethane       | 167.84 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Toluene                         | 92.15  | 10.000 J   | 12.000 J   | 5.000 J    | 14.000 J   | 7.000 J    | 7.000 J    |
| Chlorobenzene                   | 112.56 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Ethylbenzene                    | 106.18 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |
| Styrene                         | 104.16 | 50.000 U   | 50.000 U   | 50.000 U   | 5.000 J    | 50.000 U   | 50.000 U   |
| Xylenes (total)                 | 106.18 | 6.000 J    | 5.000 J    | 50.000 U   | 8.000 J    | 50.000 U   | 50.000 U   |
| 2-Chloroethyl vinyl ether       | 106.55 | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  |

U = detection limit value.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

B = Compound also detected in blank. Reported values are not blank corrected.

(1) Volumetric flow rate based on average of Particulate/HCl and MMTL tests flow measurements.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

| Test run number | 2         | 2         | 2         | 2         | 2         | 2         | 2           |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96    |
| Test time       | 1419-1459 | 1542-1622 | 1628-1708 | 1730-1810 | 1825-1914 | 1925-2005 |             |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE (2) |

**VOST EMISSIONS (lbs/dscf):**

|                                 |             |             |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 7.10E-10    | 5.60E-09 E  | 2.17E-09    | 1.11E-09    | 1.00E-09    | 1.88E-09    | 2.08E-09   |
| Bromomethane (Methyl Bromide)   | 1.86E-10    | 5.04E-10    | 2.65E-10    | 2.42E-10    | 2.03E-10    | 4.08E-10    | 3.01E-10   |
| Vinyl Chloride                  | < 2.73E-10  | < 2.80E-10  | < 2.85E-10  | < 2.84E-10  | < 2.78E-10  | < 2.72E-10  | < 2.79E-10 |
| Chloroethane (Ethyl Chloride)   | < 2.73E-10  | < 2.80E-10  | < 2.85E-10  | < 2.84E-10  | < 2.78E-10  | < 2.72E-10  | < 2.79E-10 |
| Methylene chloride              | 1.44E-10 JB | 2.14E-10 JB | 2.68E-10 JB | 2.56E-10 JB | 1.76E-10 JB | 2.06E-10 JB | 2.11E-10   |
| Acetone                         | 9.61E-09    | 2.61E-08    | 7.55E-09 J  | 1.02E-08 J  | 9.20E-09    | 9.57E-09    | 1.20E-08   |
| Carbon Disulfide                | 2.19E-11 J  | < 1.40E-10  | < 1.43E-10  | 1.99E-11 J  | 2.50E-11 J  | 2.72E-11 J  | < 6.28E-11 |
| 1,1-Dichloroethane              | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| 1,1-Dichloroethane              | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| 1,2-Dichloroethane (trans)      | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Chloroform                      | 5.57E-11 J  | 5.57E-11 J  | 5.57E-11 J  | 5.57E-11 J  | 5.57E-11 J  | 5.57E-11 J  | 5.57E-11   |
| 1,2-Dichloroethane (EDC)        | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| 2-Butanone (MEK)                | < 2.73E-09  | < 2.80E-09  | < 2.85E-09  | < 2.84E-09  | < 2.78E-09  | < 2.72E-09  | < 2.79E-09 |
| 1,1,1-Trichloroethane (TCA)     | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Carbon Tetrachloride            | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Vinyl acetate                   | < 5.46E-10  | < 5.60E-10  | < 5.70E-10  | < 5.68E-10  | < 5.55E-10  | < 5.44E-10  | < 5.57E-10 |
| Bromodichloromethane            | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| 1,2-Dichloropropane             | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| cis-1,3-Dichloropropene         | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Trichloroethene (TCE)           | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Dibromodichloromethane          | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| 1,1,2-Trichloroethane           | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Benzene                         | 6.56E-11 JB | 4.76E-11 JB | 2.85E-11 JB | 8.52E-11 JB | 5.00E-11 JB | 5.44E-11 JB | 5.52E-11   |
| trans-1,3-Dichloropropene       | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Bromoform                       | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| 4-Methyl-2-Pentanone (MIBK)     | < 2.73E-09  | < 2.80E-09  | < 2.85E-09  | < 2.84E-09  | < 2.78E-09  | < 2.72E-09  | < 2.79E-09 |
| 2-Hexanone                      | < 2.73E-09  | < 2.80E-09  | < 2.85E-09  | < 2.84E-09  | < 2.78E-09  | < 2.72E-09  | < 2.79E-09 |
| Tetrachloroethene (PCE)         | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| 1,1,2,2-Tetrachloroethane       | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Toluene                         | 2.73E-11 J  | 3.36E-11 J  | 1.43E-11 J  | 3.98E-11 J  | 1.94E-11 J  | 1.90E-11 J  | 2.56E-11   |
| Chlorobenzene                   | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Ethylbenzene                    | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | < 1.42E-10  | < 1.39E-10  | < 1.36E-10  | < 1.39E-10 |
| Styrene                         | < 1.37E-10  | < 1.40E-10  | < 1.43E-10  | 1.42E-11 J  | < 1.39E-10  | < 1.36E-10  | < 1.18E-10 |
| Xylenes (total)                 | 1.64E-11 J  | 1.40E-11 J  | < 1.43E-10  | 2.27E-11 J  | < 1.39E-10  | < 1.36E-10  | < 7.84E-11 |
| 2-Chloroethyl vinyl ether       | < 5.46E-10  | < 5.60E-10  | < 5.70E-10  | < 5.68E-10  | < 5.55E-10  | < 5.44E-10  | < 5.57E-10 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

| Test run number | 2         | 2         | 2         | 2         | 2         | 2         | 2                      |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET                 |
| Test date       | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96               |
| Test time       | 1419-1459 | 1542-1622 | 1628-1708 | 1730-1810 | 1825-1914 | 1925-2005 |                        |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE <sup>(2)</sup> |

**VOST EMISSIONS (ug/dscm):**

|                                 |             |             |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 1.14E+01    | 8.97E+01 E  | 3.47E+01    | 1.77E+01    | 1.60E+01    | 3.00E+01    | 3.33E+01   |
| Bromomethane (Methyl Bromide)   | 2.98E+00    | 8.08E+00    | 4.25E+00    | 3.87E+00    | 3.25E+00    | 6.53E+00    | 4.82E+00   |
| Vinyl Chloride                  | < 4.38E+00  | < 4.49E+00  | < 4.57E+00  | < 4.55E+00  | < 4.45E+00  | < 4.35E+00  | < 4.46E+00 |
| Chloroethane (Ethyl Chloride)   | < 4.38E+00  | < 4.49E+00  | < 4.57E+00  | < 4.55E+00  | < 4.45E+00  | < 4.35E+00  | < 4.46E+00 |
| Methylene chloride              | 2.30E+00 JB | 3.42E+00 JB | 4.29E+00 JB | 4.10E+00 JB | 2.82E+00 JB | 3.29E+00 JB | 3.37E+00   |
| Acetone                         | 1.54E+02    | 4.18E+02    | 1.21E+02 J  | 1.63E+02 J  | 1.47E+02    | 1.53E+02    | 1.93E+02   |
| Carbon Disulfide                | 3.50E-01 J  | < 2.24E+00  | < 2.28E+00  | 3.19E-01 J  | 4.00E-01 J  | 4.35E-01 J  | < 1.01E+00 |
| 1,1-Dichloroethene              | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| 1,1-Dichloroethane              | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| 1,2-Dichloroethene (trans)      | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Chloroform                      | 8.92E-01 J  | 8.92E-01 J  | 8.92E-01 J  | 8.92E-01 J  | 8.92E-01 J  | 8.92E-01 J  | 8.92E-01   |
| 1,2-Dichloroethane (EDC)        | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| 2-Butanone (MEK)                | < 4.38E+01  | < 4.49E+01  | < 4.57E+01  | < 4.55E+01  | < 4.45E+01  | < 4.35E+01  | < 4.46E+01 |
| 1,1,1-Trichloroethane (TCA)     | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Carbon Tetrachloride            | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Vinyl acetate                   | < 8.75E+00  | < 8.97E+00  | < 9.13E+00  | < 9.10E+00  | < 8.90E+00  | < 8.71E+00  | < 8.93E+00 |
| Bromodichloromethane            | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| 1,2-Dichloropropane             | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| cis-1,3-Dichloropropene         | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Trichloroethene (TCE)           | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Dibromochloromethane            | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| 1,1,2-Trichloroethane           | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Benzene                         | 1.05E+00 JB | 7.63E-01 JB | 4.57E-01 JB | 1.37E+00 JB | 8.01E-01 JB | 8.71E-01 JB | 8.84E-01   |
| trans-1,3-Dichloropropene       | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Bromoform                       | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| 4-Methyl-2-Pentanone (MIBK)     | < 4.38E+01  | < 4.49E+01  | < 4.57E+01  | < 4.55E+01  | < 4.45E+01  | < 4.35E+01  | < 4.46E+01 |
| 2-Hexanone                      | < 4.38E+01  | < 4.49E+01  | < 4.57E+01  | < 4.55E+01  | < 4.45E+01  | < 4.35E+01  | < 4.46E+01 |
| Tetrachloroethene (PCE)         | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| 1,1,2,2-Tetrachloroethane       | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Toluene                         | 4.38E-01 J  | 5.38E-01 J  | 2.28E-01 J  | 6.37E-01 J  | 3.11E-01 J  | 3.05E-01 J  | 4.10E-01   |
| Chlorobenzene                   | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Ethylbenzene                    | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | < 2.28E+00  | < 2.22E+00  | < 2.18E+00  | < 2.23E+00 |
| Styrene                         | < 2.19E+00  | < 2.24E+00  | < 2.28E+00  | 2.28E-01 J  | < 2.22E+00  | < 2.18E+00  | < 1.89E+00 |
| Xylenes (total)                 | 2.63E-01 J  | 2.24E-01 J  | < 2.28E+00  | 3.64E-01 J  | < 2.22E+00  | < 2.18E+00  | < 1.26E+00 |
| 2-Chloroethyl vinyl ether       | < 8.75E+00  | < 8.97E+00  | < 9.13E+00  | < 9.10E+00  | < 8.90E+00  | < 8.71E+00  | < 8.93E+00 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |           |           |             |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Test run number | 2         | 2         | 2         | 2         | 2         | 2         | 2           |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96    |
| Test time       | 1419-1459 | 1542-1622 | 1628-1708 | 1730-1810 | 1825-1914 | 1925-2006 |             |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE (2) |

**VOST EMISSIONS (ppm/v):**

|                                 |             |            |             |             |             |             |            |
|---------------------------------|-------------|------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 5.42E-03    | 4.28E-02 E | 1.65E-02    | 8.46E-03    | 7.63E-03    | 1.43E-02    | 1.59E-02   |
| Bromomethane (Methyl Bromide)   | 7.54E-04    | 2.05E-03   | 1.08E-03    | 9.80E-04    | 8.23E-04    | 1.66E-03    | 1.22E-03   |
| Vinyl Chloride                  | < 1.68E-03  | < 1.73E-03 | < 1.76E-03  | < 1.75E-03  | < 1.71E-03  | < 1.68E-03  | < 1.72E-03 |
| Chloroethane (Ethyl Chloride)   | < 1.63E-03  | < 1.67E-03 | < 1.70E-03  | < 1.70E-03  | < 1.66E-03  | < 1.62E-03  | < 1.66E-03 |
| Methylene chloride              | 6.52E-04 JB | 9.69E-04 B | 1.22E-03 JB | 1.16E-03 JB | 7.99E-04 JB | 9.33E-04 JB | 9.55E-04   |
| Acetone                         | 6.38E-02    | 1.73E-01   | 5.01E-02 J  | 6.75E-02 J  | 6.11E-02    | 6.35E-02    | 7.98E-02   |
| Carbon Disulfide                | 1.11E-04 J  | < 7.09E-04 | < 7.22E-04  | 1.01E-04 J  | 1.27E-04 J  | 1.38E-04 J  | < 3.18E-04 |
| 1,1-Dichloroethene              | < 5.43E-04  | < 5.57E-04 | < 5.67E-04  | < 5.65E-04  | < 5.52E-04  | < 5.40E-04  | < 5.54E-04 |
| 1,1-Dichloroethane              | < 5.32E-04  | < 5.45E-04 | < 5.55E-04  | < 5.53E-04  | < 5.41E-04  | < 5.29E-04  | < 5.43E-04 |
| 1,2-Dichloroethene (trans)      | < 5.43E-04  | < 5.57E-04 | < 5.67E-04  | < 5.65E-04  | < 5.52E-04  | < 5.40E-04  | < 5.54E-04 |
| Chloroform                      | 1.80E-04 J  | 1.80E-04 B | 1.80E-04 J  | 1.80E-04 J  | 1.80E-04 J  | 1.80E-04 J  | 1.80E-04   |
| 1,2-Dichloroethane (EDC)        | < 5.32E-04  | < 5.45E-04 | < 5.55E-04  | < 5.53E-04  | < 5.41E-04  | < 5.29E-04  | < 5.43E-04 |
| 2-Butanone (MEK)                | < 1.46E-02  | < 1.50E-02 | < 1.52E-02  | < 1.52E-02  | < 1.48E-02  | < 1.45E-02  | < 1.49E-02 |
| 1,1,1-Trichloroethane (TCA)     | < 3.95E-04  | < 4.05E-04 | < 4.12E-04  | < 4.10E-04  | < 4.01E-04  | < 3.93E-04  | < 4.03E-04 |
| Carbon Tetrachloride            | < 3.42E-04  | < 3.51E-04 | < 3.57E-04  | < 3.56E-04  | < 3.48E-04  | < 3.41E-04  | < 3.49E-04 |
| Vinyl acetate                   | < 2.45E-03  | < 2.51E-03 | < 2.55E-03  | < 2.54E-03  | < 2.49E-03  | < 2.43E-03  | < 2.50E-03 |
| Bromodichloromethane            | < 3.21E-04  | < 3.29E-04 | < 3.35E-04  | < 3.34E-04  | < 3.27E-04  | < 3.20E-04  | < 3.28E-04 |
| 1,2-Dichloropropane             | < 4.66E-04  | < 4.78E-04 | < 4.86E-04  | < 4.85E-04  | < 4.74E-04  | < 4.64E-04  | < 4.75E-04 |
| cis-1,3-Dichloropropene         | < 4.74E-04  | < 4.86E-04 | < 4.95E-04  | < 4.93E-04  | < 4.82E-04  | < 4.72E-04  | < 4.84E-04 |
| Trichloroethene (TCE)           | < 4.01E-04  | < 4.11E-04 | < 4.18E-04  | < 4.17E-04  | < 4.07E-04  | < 3.99E-04  | < 4.09E-04 |
| Dibromodichloromethane          | < 2.53E-04  | < 2.59E-04 | < 2.64E-04  | < 2.63E-04  | < 2.57E-04  | < 2.51E-04  | < 2.58E-04 |
| 1,1,2-Trichloroethane           | < 3.95E-04  | < 4.05E-04 | < 4.12E-04  | < 4.10E-04  | < 4.01E-04  | < 3.93E-04  | < 4.03E-04 |
| Benzene                         | 3.23E-04 JB | 2.35E-04 B | 1.41E-04 JB | 4.20E-04 JB | 2.47E-04 JB | 2.68E-04 JB | 2.72E-04   |
| trans-1,3-Dichloropropane       | < 4.74E-04  | < 4.86E-04 | < 4.95E-04  | < 4.93E-04  | < 4.82E-04  | < 4.72E-04  | < 4.84E-04 |
| Bromoform                       | < 2.08E-04  | < 2.14E-04 | < 2.17E-04  | < 2.17E-04  | < 2.12E-04  | < 2.07E-04  | < 2.12E-04 |
| 4-Methyl-2-Pentanone (MIBK)     | < 1.05E-02  | < 1.08E-02 | < 1.10E-02  | < 1.09E-02  | < 1.07E-02  | < 1.05E-02  | < 1.07E-02 |
| 2-Hexanone                      | < 1.05E-02  | < 1.08E-02 | < 1.10E-02  | < 1.09E-02  | < 1.07E-02  | < 1.05E-02  | < 1.07E-02 |
| Tetrachloroethene (PCE)         | < 3.17E-04  | < 3.26E-04 | < 3.31E-04  | < 3.30E-04  | < 3.23E-04  | < 3.16E-04  | < 3.24E-04 |
| 1,1,2,2-Tetrachloroethane       | < 3.14E-04  | < 3.22E-04 | < 3.27E-04  | < 3.26E-04  | < 3.19E-04  | < 3.12E-04  | < 3.20E-04 |
| Toluene                         | 1.14E-04 J  | 1.41E-04 B | 5.96E-05 J  | 1.66E-04 J  | 8.13E-05 J  | 7.96E-05 J  | 1.07E-04   |
| Chlorobenzene                   | < 4.68E-04  | < 4.80E-04 | < 4.88E-04  | < 4.86E-04  | < 4.75E-04  | < 4.65E-04  | < 4.77E-04 |
| Ethylbenzene                    | < 4.96E-04  | < 5.08E-04 | < 5.17E-04  | < 5.16E-04  | < 5.04E-04  | < 4.93E-04  | < 5.06E-04 |
| Styrene                         | < 5.05E-04  | < 5.18E-04 | < 5.27E-04  | 5.26E-05 J  | < 5.14E-04  | < 5.03E-04  | < 4.37E-04 |
| Xylenes (total)                 | 5.95E-05 J  | 5.08E-05 B | < 5.17E-04  | 8.25E-05 J  | < 5.04E-04  | < 4.93E-04  | < 2.85E-04 |
| 2-Chloromethyl vinyl ether      | < 1.98E-03  | < 2.03E-03 | < 2.06E-03  | < 2.06E-03  | < 2.01E-03  | < 1.97E-03  | < 2.02E-03 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

| Test run number | 2         | 2         | 2         | 2         | 2         | 2         | 2                      |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET                 |
| Test date       | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96               |
| Test time       | 1419-1459 | 1542-1622 | 1628-1708 | 1730-1810 | 1825-1914 | 1925-2005 |                        |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE <sup>(2)</sup> |

**VOST EMISSIONS (lb/hr):**

|                                 |             |             |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 4.16E-05    | 3.28E-04 E  | 1.27E-04    | 6.48E-05    | 5.85E-05    | 1.10E-04    | 1.22E-04   |
| Bromomethane (Methyl Bromide)   | 1.09E-05    | 2.95E-05    | 1.55E-05    | 1.41E-05    | 1.19E-05    | 2.39E-05    | 1.76E-05   |
| Vinyl Chloride                  | < 1.60E-05  | < 1.64E-05  | < 1.67E-05  | < 1.66E-05  | < 1.62E-05  | < 1.59E-05  | < 1.63E-05 |
| Chloroethane (Ethyl Chloride)   | < 1.60E-05  | < 1.64E-05  | < 1.67E-05  | < 1.66E-05  | < 1.62E-05  | < 1.59E-05  | < 1.63E-05 |
| Methylene chloride              | 8.41E-06 JB | 1.25E-05 JB | 1.57E-05 JB | 1.50E-05 JB | 1.03E-05 JB | 1.20E-05 JB | 1.23E-05   |
| Acetone                         | 5.62E-04    | 1.53E-03    | 4.42E-04 J  | 5.95E-04 J  | 5.38E-04    | 5.60E-04    | 7.04E-04   |
| Carbon Disulfide                | 1.28E-06 J  | < 8.19E-06  | < 8.34E-06  | 1.16E-06 J  | 1.46E-06 J  | 1.59E-06 J  | < 3.67E-06 |
| 1,1-Dichloroethene              | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| 1,1-Dichloroethane              | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| 1,2-Dichloroethene (trans)      | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Chloroform                      | 3.26E-06 J  | 3.26E-06 J  | 3.26E-06 J  | 3.26E-06 J  | 3.26E-06 J  | 3.26E-06 J  | 3.26E-06   |
| 1,2-Dichloroethane (EDC)        | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| 2-Butanone (MEK)                | < 1.60E-04  | < 1.64E-04  | < 1.67E-04  | < 1.66E-04  | < 1.62E-04  | < 1.59E-04  | < 1.63E-04 |
| 1,1,1-Trichloroethane (TCA)     | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Carbon Tetrachloride            | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Vinyl acetate                   | < 3.20E-05  | < 3.28E-05  | < 3.34E-05  | < 3.32E-05  | < 3.25E-05  | < 3.18E-05  | < 3.26E-05 |
| Bromodichloromethane            | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| 1,2-Dichloropropane             | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| cis-1,3-Dichloropropene         | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Trichloroethene (TCE)           | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Dibromodichloromethane          | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| 1,1,2-Trichloroethane           | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Benzene                         | 3.84E-06 JB | 2.79E-06 JB | 1.67E-06 JB | 4.99E-06 JB | 2.92E-06 JB | 3.18E-06 JB | 3.23E-06   |
| trans-1,3-Dichloropropene       | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Bromoform                       | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| 4-Methyl-2-Pentanone (MIBK)     | < 1.60E-04  | < 1.64E-04  | < 1.67E-04  | < 1.66E-04  | < 1.62E-04  | < 1.59E-04  | < 1.63E-04 |
| 2-Hexanone                      | < 1.60E-04  | < 1.64E-04  | < 1.67E-04  | < 1.66E-04  | < 1.62E-04  | < 1.59E-04  | < 1.63E-04 |
| Tetrachloroethene (PCE)         | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| 1,1,2,2-Tetrachloroethane       | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Toluene                         | 1.60E-06 J  | 1.97E-06 J  | 8.34E-07 J  | 2.33E-06 J  | 1.14E-06 J  | 1.11E-06 J  | 1.50E-06   |
| Chlorobenzene                   | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Ethylbenzene                    | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | < 8.31E-06  | < 8.12E-06  | < 7.95E-06  | < 8.15E-06 |
| Styrene                         | < 7.99E-06  | < 8.19E-06  | < 8.34E-06  | 8.31E-07 J  | < 8.12E-06  | < 7.95E-06  | < 6.91E-06 |
| Xylenes (total)                 | 9.59E-07 J  | 8.19E-07 J  | < 8.34E-06  | 1.33E-06 J  | < 8.12E-06  | < 7.95E-06  | < 4.59E-06 |
| 2-Chloromethyl vinyl ether      | < 3.20E-05  | < 3.28E-05  | < 3.34E-05  | < 3.32E-05  | < 3.25E-05  | < 3.18E-05  | < 3.26E-05 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |           |           |                        |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|
| Test run number | 2         | 2         | 2         | 2         | 2         | 2         | 2                      |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET                 |
| Test date       | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96  | 02-02-96               |
| Test time       | 1419-1459 | 1542-1622 | 1628-1708 | 1730-1810 | 1825-1914 | 1925-2005 |                        |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE <sup>(2)</sup> |

**VOST EMISSIONS (g/sec):**

|                                 |             |             |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 5.24E-06    | 4.13E-05 E  | 1.60E-05    | 8.17E-06    | 7.37E-06    | 1.38E-05    | 1.53E-05   |
| Bromomethane (Methyl Bromide)   | 1.37E-06    | 3.72E-06    | 1.95E-06    | 1.78E-06    | 1.49E-06    | 3.01E-06    | 2.22E-06   |
| Vinyl Chloride                  | < 2.01E-06  | < 2.06E-06  | < 2.10E-06  | < 2.09E-06  | < 2.05E-06  | < 2.00E-06  | < 2.05E-06 |
| Chloroethane (Ethyl Chloride)   | < 2.01E-06  | < 2.06E-06  | < 2.10E-06  | < 2.09E-06  | < 2.05E-06  | < 2.00E-06  | < 2.05E-06 |
| Methylene chloride              | 1.06E-06 JB | 1.57E-06 JB | 1.98E-06 JB | 1.89E-06 JB | 1.30E-06 JB | 1.52E-06 JB | 1.55E-06   |
| Acetone                         | 7.08E-05    | 1.92E-04    | 5.57E-05 J  | 7.50E-05 J  | 6.78E-05    | 7.05E-05    | 8.87E-05   |
| Carbon Disulfide                | 1.61E-07 J  | < 1.03E-06  | < 1.05E-06  | 1.47E-07 J  | 1.84E-07 J  | 2.00E-07 J  | 4.63E-07   |
| 1,1-Dichloroethene              | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| 1,1-Dichloroethane              | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| 1,2-Dichloroethene (trans)      | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Chloroform                      | 4.11E-07 J  | 4.11E-07 J  | 4.11E-07 J  | 4.11E-07 J  | 4.11E-07 J  | 4.11E-07 J  | 4.11E-07   |
| 1,2-Dichloroethane (EDC)        | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| 2-Butanone (MEK)                | < 2.01E-05  | < 2.06E-05  | < 2.10E-05  | < 2.09E-05  | < 2.05E-05  | < 2.00E-05  | < 2.05E-05 |
| 1,1,1-Trichloroethane (TCA)     | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Carbon Tetrachloride            | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Vinyl acetate                   | < 4.03E-06  | < 4.13E-06  | < 4.20E-06  | < 4.19E-06  | < 4.09E-06  | < 4.01E-06  | < 4.11E-06 |
| Bromodichloromethane            | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| 1,2-Dichloropropane             | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| cis-1,3-Dichloropropene         | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Trichloroethene (TCE)           | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Dibromodichloromethane          | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| 1,1,2-Trichloroethane           | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Benzene                         | 4.83E-07 JB | 3.51E-07 JB | 2.10E-07 JB | 6.28E-07 JB | 3.68E-07 JB | 4.01E-07 JB | 4.07E-07   |
| trans-1,3-Dichloropropene       | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Bromoform                       | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| 4-Methyl-2-Pentanone (MIBK)     | < 2.01E-05  | < 2.06E-05  | < 2.10E-05  | < 2.09E-05  | < 2.05E-05  | < 2.00E-05  | < 2.05E-05 |
| 2-Hexanone                      | < 2.01E-05  | < 2.06E-05  | < 2.10E-05  | < 2.09E-05  | < 2.05E-05  | < 2.00E-05  | < 2.05E-05 |
| Tetrachloroethene (PCE)         | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| 1,1,2,2-Tetrachloroethane       | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Toluene                         | 2.01E-07 J  | 2.48E-07 J  | 1.05E-07 J  | 2.93E-07 J  | 1.43E-07 J  | 1.40E-07 J  | 1.89E-07   |
| Chlorobenzene                   | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Ethylbenzene                    | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | < 1.05E-06  | < 1.02E-06  | < 1.00E-06  | < 1.03E-06 |
| Styrene                         | < 1.01E-06  | < 1.03E-06  | < 1.05E-06  | 1.05E-07 J  | < 1.02E-06  | < 1.00E-06  | 8.70E-07   |
| Xylenes (total)                 | 1.21E-07 J  | 1.03E-07 J  | < 1.05E-06  | 1.68E-07 J  | < 1.02E-06  | < 1.00E-06  | 5.78E-07   |
| 2-Chloroethyl vinyl ether       | < 4.03E-06  | < 4.13E-06  | < 4.20E-06  | < 4.19E-06  | < 4.09E-06  | < 4.01E-06  | < 4.11E-06 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.



**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |           |           |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Test run number | 3         | 3         | 3         | 3         | 3         | 3         |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    |
| Test date       | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  |
| Test time       | 1418-1458 | 1503-1543 | 1600-1640 | 1652-1750 | 1802-1842 | 1910-1950 |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         |

**SAMPLING DATA:**

|                                                   |        |        |        |        |        |        |
|---------------------------------------------------|--------|--------|--------|--------|--------|--------|
| Duration, minutes                                 | 40.00  | 40.00  | 40.00  | 40.00  | 40.00  | 40.00  |
| Average dry gas meter press. in. H <sub>2</sub> O | 1.50   | 1.50   | 1.48   | 1.49   | 1.50   | 1.50   |
| Average dry gas meter temp. deg. C                | 5.94   | 5.88   | 5.94   | 6.38   | 7.44   | 6.81   |
| Average dry gas meter temp. deg. F                | 42.69  | 42.58  | 42.69  | 43.48  | 45.39  | 44.26  |
| Average absolute meter temp. deg. R               | 502.69 | 502.58 | 502.69 | 503.48 | 505.39 | 504.26 |
| Actual sample volume, liters                      | 21.420 | 22.233 | 20.770 | 22.441 | 22.218 | 23.278 |
| Meter box calibration, Y                          | 1.0060 | 1.0060 | 1.0060 | 1.0060 | 1.0060 | 1.0060 |
| Barometric pressure, in. Hg                       | 30.28  | 30.28  | 30.28  | 30.28  | 30.28  | 30.28  |
| Sample volume, dscf                               | 0.8116 | 0.8425 | 0.7869 | 0.8489 | 0.8373 | 0.8792 |
| Volumetric flow rate, dscf/min (1)                | 950    | 950    | 950    | 950    | 950    | 950    |

**LABORATORY DATA, ng**

| M.W.                            |        |            |            |            |            |            |            |  |  |
|---------------------------------|--------|------------|------------|------------|------------|------------|------------|--|--|
| Chloromethane (Methyl Chloride) | 50.49  | 520.000 J  | 431.000    | 730.000    | 330.000    | 4600.000 E | 2500.000 E |  |  |
| Bromomethane (Methyl Bromide)   | 94.95  | 136.000 JB | 237.000 B  | 78.000     | 87.000     | 260.000    | 360.000    |  |  |
| Vinyl Chloride                  | 62.50  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  |  |  |
| Chloroethane (Ethyl Chloride)   | 64.52  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  | 100.000 U  |  |  |
| Methylene chloride              | 84.93  | 138.905 B  | 90.390 B   | 75.723 JB  | 78.694 JB  | 114.139 JB | 95.148 B   |  |  |
| Acetone                         | 58.09  | 2710.608   | 2512.393   | 1553.266 J | 3146.852 J | 2188.704   | 1548.178   |  |  |
| Carbon Disulfide                | 76.13  | 11.000 J   | 13.000 J   | 7.000 J    | 7.000 J    | 50.000 U   | 6.000 J    |  |  |
| 1,1-Dichloroethene              | 96.94  | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| 1,1-Dichloroethane              | 98.96  | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| 1,2-Dichloroethene (trans)      | 96.94  | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Chloroform                      | 119.37 | 12.968 J   | 13.463 J   | 12.574 J   | 13.565 J   | 13.380 J   | 14.049 J   |  |  |
| 1,2-Dichloroethane (EDC)        | 98.96  | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| 2-Butanone (MEK)                | 72.12  | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U |  |  |
| 1,1,1-Trichloroethane (TCA)     | 133.40 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Carbon Tetrachloride            | 153.81 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Vinyl acetate                   | 86.09  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  |  |  |
| Bromodichloromethane            | 163.83 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| 1,2-Dichloropropane             | 112.99 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| cis-1,3-Dichloropropene         | 110.98 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Trichloroethene (TCE)           | 131.38 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Dibromochloromethane            | 208.29 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| 1,1,2-Trichloroethane           | 133.40 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Benzene                         | 78.12  | 28.000 JB  | 61.000 JB  | 23.000 JB  | 25.000 JB  | 19.000 JB  | 18.000 JB  |  |  |
| trans-1,3-Dichloropropene       | 110.98 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Bromoform                       | 252.75 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| 4-Methyl-2-Pentanone (MIBK)     | 100.18 | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U |  |  |
| 2-Hexanone                      | 100.18 | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U | 1000.000 U |  |  |
| Tetrachloroethene (PCE)         | 165.82 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| 1,1,2,2-Tetrachloroethane       | 167.84 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Toluene                         | 92.15  | 11.000 J   | 25.000     | 10.000 J   | 8.000 J    | 7.000 J    | 5.000 J    |  |  |
| Chlorobenzene                   | 112.56 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Ethylbenzene                    | 106.18 | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Styrene                         | 104.16 | 50.000 U   | 12.000 J   | 50.000 U   | 50.000 U   | 50.000 U   | 50.000 U   |  |  |
| Xylenes (total)                 | 106.18 | 10.000 J   | 9.000 J    | 50.000 U   | 3.000 J    | 3.000 J    | 50.000 U   |  |  |
| 2-Chloroethyl vinyl ether       | 106.55 | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  | 200.000 U  |  |  |

U = detection limit value.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

B = Compound also detected in blank. Reported values are not blank corrected.

(1) Volumetric flow rate based on average of Particulate/HCl and MMTL tests flow measurements.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

| Test run number | 3         | 3         | 3         | 3         | 3         | 3         | 3                      |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET                 |
| Test date       | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96               |
| Test time       | 1418-1458 | 1503-1543 | 1600-1640 | 1652-1750 | 1802-1842 | 1910-1950 |                        |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE <sup>(2)</sup> |

**VOST EMISSIONS (lbs/dscf):**

|                                 |             |             |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 1.41E-09 J  | 1.13E-09    | 2.05E-09    | 8.57E-10    | 1.21E-08 E  | 6.27E-09 E  | 3.97E-09   |
| Bromomethane (Methyl Bromide)   | 3.69E-10 JB | 6.20E-10 B  | 2.19E-10    | 2.26E-10    | 6.85E-10    | 9.03E-10    | 5.04E-10   |
| Vinyl Chloride                  | < 2.72E-10  | < 2.62E-10  | < 2.80E-10  | < 2.60E-10  | < 2.63E-10  | < 2.51E-10  | < 2.65E-10 |
| Chloroethane (Ethyl Chloride)   | < 2.72E-10  | < 2.62E-10  | < 2.80E-10  | < 2.60E-10  | < 2.63E-10  | < 2.51E-10  | < 2.65E-10 |
| Methylene chloride              | 3.77E-10 B  | 2.37E-10 B  | 2.12E-10 JB | 2.04E-10 JB | 3.01E-10 JB | 2.39E-10 B  | 2.62E-10   |
| Acetone                         | 7.36E-09    | 6.57E-09    | 4.35E-09 J  | 8.17E-09 J  | 5.76E-09    | 3.88E-09    | 6.02E-09   |
| Carbon Disulfide                | 2.99E-11 J  | 3.40E-11 J  | 1.96E-11 J  | 1.82E-11 J  | < 1.32E-10  | 1.50E-11 J  | < 4.14E-11 |
| 1,1-Dichloroethene              | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| 1,1-Dichloroethane              | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| 1,2-Dichloroethene (trans)      | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Chloroform                      | 3.52E-11 J  | 3.52E-11 J  | 3.52E-11 J  | 3.52E-11 J  | 3.52E-11 J  | 3.52E-11 J  | 3.52E-11   |
| 1,2-Dichloroethane (EDC)        | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| 2-Butanone (MEK)                | < 2.72E-09  | < 2.62E-09  | < 2.80E-09  | < 2.60E-09  | < 2.63E-09  | < 2.51E-09  | < 2.65E-09 |
| 1,1,1-Trichloroethane (TCA)     | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Carbon Tetrachloride            | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Vinyl acetate                   | < 5.43E-10  | < 5.23E-10  | < 5.60E-10  | < 5.19E-10  | < 5.27E-10  | < 5.01E-10  | < 5.29E-10 |
| Bromodichloromethane            | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| 1,2-Dichloropropane             | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| cis-1,3-Dichloropropene         | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Trichloroethene (TCE)           | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Dibromodichloromethane          | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| 1,1,2-Trichloroethane           | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Benzene                         | 7.61E-11 JB | 1.60E-10 JB | 6.44E-11 JB | 6.49E-11 JB | 5.00E-11 JB | 4.51E-11 JB | 7.67E-11   |
| trans-1,3-Dichloropropene       | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Bromoform                       | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| 4-Methyl-2-Pentanone (MIBK)     | < 2.72E-09  | < 2.62E-09  | < 2.80E-09  | < 2.60E-09  | < 2.63E-09  | < 2.51E-09  | < 2.65E-09 |
| 2-Hexanone                      | < 2.72E-09  | < 2.62E-09  | < 2.80E-09  | < 2.60E-09  | < 2.63E-09  | < 2.51E-09  | < 2.65E-09 |
| Tetrachloroethene (PCE)         | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| 1,1,2,2-Tetrachloroethane       | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Toluene                         | 2.99E-11 J  | 6.54E-11    | 2.80E-11 J  | 2.08E-11 J  | 1.84E-11 J  | 1.25E-11 J  | 2.92E-11   |
| Chlorobenzene                   | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Ethylbenzene                    | < 1.36E-10  | < 1.31E-10  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.32E-10 |
| Styrene                         | < 1.36E-10  | 3.14E-11 J  | < 1.40E-10  | < 1.30E-10  | < 1.32E-10  | < 1.25E-10  | < 1.16E-10 |
| Xylenes (total)                 | 2.72E-11 J  | 2.35E-11 J  | < 1.40E-10  | 7.79E-12 J  | 7.90E-12 J  | < 1.25E-10  | 5.53E-11   |
| 2-Chloroethyl vinyl ether       | < 5.43E-10  | < 5.23E-10  | < 5.60E-10  | < 5.19E-10  | < 5.27E-10  | < 5.01E-10  | < 5.29E-10 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |           |           |             |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Test run number | 3         | 3         | 3         | 3         | 3         | 3         | 3           |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96    |
| Test time       | 1418-1458 | 1503-1543 | 1600-1640 | 1652-1750 | 1802-1842 | 1910-1950 |             |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE (2) |

**VOST EMISSIONS (ug/dscm):**

|                                 |             |             |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 2.26E+01 J  | 1.81E+01    | 3.28E+01    | 1.37E+01    | 1.94E+02 E  | 1.00E+02 E  | 6.36E+01   |
| Bromomethane (Methyl Bromide)   | 5.92E+00 JB | 9.93E+00 B  | 3.50E+00    | 3.62E+00    | 1.10E+01    | 1.45E+01    | 8.07E+00   |
| Vinyl Chloride                  | < 4.35E+00  | < 4.19E+00  | < 4.49E+00  | < 4.16E+00  | < 4.22E+00  | < 4.02E+00  | < 4.24E+00 |
| Chloroethane (Ethyl Chloride)   | < 4.35E+00  | < 4.19E+00  | < 4.49E+00  | < 4.16E+00  | < 4.22E+00  | < 4.02E+00  | < 4.24E+00 |
| Methylene chloride              | 6.04E+00 B  | 3.79E+00 B  | 3.40E+00 JB | 3.27E+00 JB | 4.81E+00 JB | 3.82E+00 B  | 4.19E+00   |
| Acetone                         | 1.18E+02    | 1.05E+02    | 6.97E+01 J  | 1.31E+02 J  | 9.23E+01    | 6.22E+01    | 9.64E+01   |
| Carbon Disulfide                | 4.79E-01 J  | 5.45E-01 J  | 3.14E-01 J  | 2.91E-01 J  | < 2.11E+00  | 2.41E-01 J  | < 6.63E-01 |
| 1,1-Dichloroethane              | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| 1,1-Dichloroethane (trans)      | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Chloroform                      | 5.64E-01 J  | 5.64E-01 J  | 5.64E-01 J  | 5.64E-01 J  | 5.64E-01 J  | 5.64E-01 J  | 5.64E-01   |
| 1,2-Dichloroethane (EDC)        | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| 2-Butanone (MEK)                | < 4.35E+01  | < 4.19E+01  | < 4.49E+01  | < 4.16E+01  | < 4.22E+01  | < 4.02E+01  | < 4.24E+01 |
| 1,1,1-Trichloroethane (TCA)     | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Carbon Tetrachloride            | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Vinyl acetate                   | < 8.70E+00  | < 8.38E+00  | < 8.97E+00  | < 8.32E+00  | < 8.43E+00  | < 8.03E+00  | < 8.47E+00 |
| Bromodichloromethane            | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| 1,2-Dichloropropane             | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| cis-1,3-Dichloropropene         | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Trichloroethene (TCE)           | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Dibromochloromethane            | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| 1,1,2-Trichloroethane           | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Benzene                         | 1.22E+00 JB | 2.56E+00 JB | 1.03E+00 JB | 1.04E+00 JB | 8.01E-01 JB | 7.23E-01 JB | 1.23E+00   |
| trans-1,3-Dichloropropene       | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Bromoform                       | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| 4-Methyl-2-Pentanone (MIBK)     | < 4.35E+01  | < 4.19E+01  | < 4.49E+01  | < 4.16E+01  | < 4.22E+01  | < 4.02E+01  | < 4.24E+01 |
| 2-Hexanone                      | < 4.35E+01  | < 4.19E+01  | < 4.49E+01  | < 4.16E+01  | < 4.22E+01  | < 4.02E+01  | < 4.24E+01 |
| Tetrachloroethene (PCE)         | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| 1,1,2,2-Tetrachloroethane       | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Toluene                         | 4.79E-01 J  | 1.05E+00    | 4.49E-01 J  | 3.33E-01 J  | 2.95E-01 J  | 2.01E-01 J  | 4.67E-01   |
| Chlorobenzene                   | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Ethylbenzene                    | < 2.18E+00  | < 2.10E+00  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 2.12E+00 |
| Styrene                         | < 2.18E+00  | 5.03E-01 J  | < 2.24E+00  | < 2.08E+00  | < 2.11E+00  | < 2.01E+00  | < 1.85E+00 |
| Xylenes (total)                 | 4.35E-01 J  | 3.77E-01 J  | < 2.24E+00  | 1.25E-01 J  | 1.27E-01 J  | < 2.01E+00  | < 8.86E-01 |
| 2-Chloroethyl vinyl ether       | < 8.70E+00  | < 8.38E+00  | < 8.97E+00  | < 8.32E+00  | < 8.43E+00  | < 8.03E+00  | < 8.47E+00 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

| Test run number | 3         | 3         | 3         | 3         | 3         | 3         | 3           |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96    |
| Test time       | 1418-1458 | 1503-1543 | 1600-1640 | 1652-1750 | 1802-1842 | 1910-1950 |             |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE (2) |

**VOST EMISSIONS (ppm/v):**

|                                 |             |            |             |             |             |             |            |
|---------------------------------|-------------|------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 1.08E-02 J  | 8.61E-03   | 1.56E-02    | 6.54E-03    | 9.24E-02 E  | 4.78E-02 E  | 3.03E-02   |
| Bromomethane (Methyl Bromide)   | 1.50E-03 JB | 2.52E-03 B | 8.87E-04    | 9.17E-04    | 2.78E-03    | 3.66E-03    | 2.04E-03   |
| Vinyl Chloride                  | < 1.67E-03  | < 1.61E-03 | < 1.73E-03  | < 1.60E-03  | < 1.62E-03  | < 1.55E-03  | < 1.63E-03 |
| Chloroethane (Ethyl Chloride)   | < 1.62E-03  | < 1.56E-03 | < 1.67E-03  | < 1.55E-03  | < 1.57E-03  | < 1.50E-03  | < 1.58E-03 |
| Methylene chloride              | 1.71E-03 B  | 1.07E-03 B | 9.63E-04 JB | 9.27E-04 JB | 1.36E-03 JB | 1.08E-03 B  | 1.19E-03   |
| Acetone                         | 4.88E-02    | 4.36E-02   | 2.89E-02 J  | 5.42E-02 J  | 3.82E-02    | 2.58E-02    | 3.99E-02   |
| Carbon Disulfide                | 1.51E-04 J  | 1.72E-04 B | 9.93E-05 J  | 9.20E-05 J  | < 6.66E-04  | 7.62E-05 J  | < 2.10E-04 |
| 1,1-Dichloroethane              | < 5.40E-04  | < 5.20E-04 | < 5.57E-04  | < 5.16E-04  | < 5.23E-04  | < 4.98E-04  | < 5.26E-04 |
| 1,1-Dichloroethane (trans)      | < 5.29E-04  | < 5.09E-04 | < 5.45E-04  | < 5.06E-04  | < 5.13E-04  | < 4.88E-04  | < 5.15E-04 |
| 1,2-Dichloroethane (trans)      | < 5.40E-04  | < 5.20E-04 | < 5.57E-04  | < 5.16E-04  | < 5.23E-04  | < 4.98E-04  | < 5.26E-04 |
| Chloroform                      | 1.14E-04 J  | 1.14E-04 B | 1.14E-04 J  | 1.14E-04 J  | 1.14E-04 J  | 1.14E-04 J  | 1.14E-04   |
| 1,2-Dichloroethane (EDC)        | < 5.29E-04  | < 5.09E-04 | < 5.45E-04  | < 5.06E-04  | < 5.13E-04  | < 4.88E-04  | < 5.15E-04 |
| 2-Butanone (MEK)                | < 1.45E-02  | < 1.40E-02 | < 1.50E-02  | < 1.39E-02  | < 1.41E-02  | < 1.34E-02  | < 1.41E-02 |
| 1,1,1-Trichloroethane (TCA)     | < 3.92E-04  | < 3.78E-04 | < 4.05E-04  | < 3.75E-04  | < 3.80E-04  | < 3.62E-04  | < 3.82E-04 |
| Carbon Tetrachloride            | < 3.40E-04  | < 3.28E-04 | < 3.51E-04  | < 3.25E-04  | < 3.30E-04  | < 3.14E-04  | < 3.31E-04 |
| Vinyl acetate                   | < 2.43E-03  | < 2.34E-03 | < 2.51E-03  | < 2.32E-03  | < 2.36E-03  | < 2.24E-03  | < 2.37E-03 |
| Bromodichloromethane            | < 3.19E-04  | < 3.08E-04 | < 3.29E-04  | < 3.05E-04  | < 3.10E-04  | < 2.95E-04  | < 3.11E-04 |
| 1,2-Dichloropropane             | < 4.63E-04  | < 4.46E-04 | < 4.78E-04  | < 4.43E-04  | < 4.49E-04  | < 4.28E-04  | < 4.51E-04 |
| cis-1,3-Dichloropropene         | < 4.72E-04  | < 4.54E-04 | < 4.86E-04  | < 4.51E-04  | < 4.57E-04  | < 4.35E-04  | < 4.59E-04 |
| Trichloroethene (TCE)           | < 3.98E-04  | < 3.84E-04 | < 4.11E-04  | < 3.81E-04  | < 3.86E-04  | < 3.68E-04  | < 3.88E-04 |
| Dibromodichloromethane          | < 2.51E-04  | < 2.42E-04 | < 2.59E-04  | < 2.40E-04  | < 2.44E-04  | < 2.32E-04  | < 2.45E-04 |
| 1,1,2-Trichloroethane           | < 3.92E-04  | < 3.78E-04 | < 4.05E-04  | < 3.75E-04  | < 3.80E-04  | < 3.62E-04  | < 3.82E-04 |
| Benzene                         | 3.75E-04 JB | 7.87E-04 B | 3.18E-04 JB | 3.20E-04 JB | 2.47E-04 JB | 2.23E-04 JB | 3.78E-04   |
| trans-1,3-Dichloropropene       | < 4.72E-04  | < 4.54E-04 | < 4.86E-04  | < 4.51E-04  | < 4.57E-04  | < 4.35E-04  | < 4.59E-04 |
| Bromoform                       | < 2.07E-04  | < 1.99E-04 | < 2.14E-04  | < 1.98E-04  | < 2.01E-04  | < 1.91E-04  | < 2.02E-04 |
| 4-Methyl-2-Pentanone (MIBK)     | < 1.04E-02  | < 1.01E-02 | < 1.08E-02  | < 9.99E-03  | < 1.01E-02  | < 9.65E-03  | < 1.02E-02 |
| 2-Hexanone                      | < 1.04E-02  | < 1.01E-02 | < 1.08E-02  | < 9.99E-03  | < 1.01E-02  | < 9.65E-03  | < 1.02E-02 |
| Tetrachloroethene (PCE)         | < 3.16E-04  | < 3.04E-04 | < 3.26E-04  | < 3.02E-04  | < 3.06E-04  | < 2.91E-04  | < 3.07E-04 |
| 1,1,2,2-Tetrachloroethane       | < 3.12E-04  | < 3.00E-04 | < 3.22E-04  | < 2.98E-04  | < 3.02E-04  | < 2.88E-04  | < 3.04E-04 |
| Toluene                         | 1.25E-04 J  | 2.74E-04   | 1.17E-04 J  | 8.69E-05 J  | 7.71E-05 J  | 5.24E-05 J  | 1.22E-04   |
| Chlorobenzene                   | < 4.65E-04  | < 4.48E-04 | < 4.80E-04  | < 4.45E-04  | < 4.51E-04  | < 4.29E-04  | < 4.53E-04 |
| Ethylbenzene                    | < 4.93E-04  | < 4.75E-04 | < 5.08E-04  | < 4.71E-04  | < 4.78E-04  | < 4.55E-04  | < 4.80E-04 |
| Styrene                         | < 5.02E-04  | 1.16E-04 B | < 5.18E-04  | < 4.80E-04  | < 4.87E-04  | < 4.64E-04  | < 4.28E-04 |
| Xylenes (total)                 | 9.86E-05 J  | 8.55E-05 B | < 5.08E-04  | 2.83E-05 J  | 2.87E-05 J  | < 4.55E-04  | < 2.01E-04 |
| 2-Chloromethyl vinyl ether      | < 1.96E-03  | < 1.89E-03 | < 2.03E-03  | < 1.88E-03  | < 1.90E-03  | < 1.81E-03  | < 1.91E-03 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

| Test run number | 3         | 3         | 3         | 3         | 3         | 3         | 3           |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET      |
| Test date       | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96    |
| Test time       | 1418-1458 | 1503-1543 | 1600-1640 | 1652-1750 | 1802-1842 | 1910-1950 |             |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE (2) |

**VOST EMISSIONS (lb/hr):**

|                                 |             |             |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 8.05E-05 J  | 6.43E-05    | 1.17E-04    | 4.89E-05    | 6.90E-04 E  | 3.57E-04 E  | 2.26E-04   |
| Bromomethane (Methyl Bromide)   | 2.11E-05 JB | 3.53E-05 B  | 1.25E-05    | 1.29E-05    | 3.90E-05    | 5.15E-05    | 2.87E-05   |
| Vinyl Chloride                  | < 1.55E-05  | < 1.49E-05  | < 1.60E-05  | < 1.48E-05  | < 1.50E-05  | < 1.43E-05  | < 1.51E-05 |
| Chloroethane (Ethyl Chloride)   | < 1.55E-05  | < 1.49E-05  | < 1.60E-05  | < 1.48E-05  | < 1.50E-05  | < 1.43E-05  | < 1.51E-05 |
| Methylene chloride              | 2.15E-05 B  | 1.35E-05 B  | 1.21E-05 JB | 1.16E-05 JB | 1.71E-05 JB | 1.36E-05 B  | 1.49E-05   |
| Acetone                         | 4.20E-04    | 3.75E-04    | 2.48E-04 J  | 4.66E-04 J  | 3.28E-04    | 2.21E-04    | 3.43E-04   |
| Carbon Disulfide                | 1.70E-06 J  | 1.94E-06 J  | 1.12E-06 J  | 1.04E-06 J  | < 7.50E-06  | 8.58E-07 J  | < 2.36E-06 |
| 1,1-Dichloroethene              | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| 1,1-Dichloroethane              | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| 1,2-Dichloroethene (trans)      | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Chloroform                      | 2.01E-06 J  | 2.01E-06 J  | 2.01E-06 J  | 2.01E-06 J  | 2.01E-06 J  | 2.01E-06 J  | 2.01E-06   |
| 1,2-Dichloroethane (EDC)        | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| 2-Butanone (MEK)                | < 1.55E-04  | < 1.49E-04  | < 1.60E-04  | < 1.48E-04  | < 1.50E-04  | < 1.43E-04  | < 1.51E-04 |
| 1,1,1-Trichloroethane (TCA)     | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Carbon Tetrachloride            | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Vinyl acetate                   | < 3.10E-05  | < 2.98E-05  | < 3.19E-05  | < 2.96E-05  | < 3.00E-05  | < 2.86E-05  | < 3.02E-05 |
| Bromodichloromethane            | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| 1,2-Dichloropropane             | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| cis-1,3-Dichloropropene         | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Trichloroethene (TCE)           | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Dibromodichloromethane          | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| 1,1,2-Trichloroethane           | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Benzene                         | 4.34E-06 JB | 9.10E-06 JB | 3.67E-06 JB | 3.70E-06 JB | 2.85E-06 JB | 2.57E-06 JB | 4.37E-06   |
| trans-1,3-Dichloropropene       | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Bromoform                       | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| 4-Methyl-2-Pentanone (MIBK)     | < 1.55E-04  | < 1.49E-04  | < 1.60E-04  | < 1.48E-04  | < 1.50E-04  | < 1.43E-04  | < 1.51E-04 |
| 2-Hexanone                      | < 1.55E-04  | < 1.49E-04  | < 1.60E-04  | < 1.48E-04  | < 1.50E-04  | < 1.43E-04  | < 1.51E-04 |
| Tetrachloroethene (PCE)         | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| 1,1,2,2-Tetrachloroethane       | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Toluene                         | 1.70E-06 J  | 3.73E-06    | 1.60E-06 J  | 1.18E-06 J  | 1.05E-06 J  | 7.15E-07 J  | 1.66E-06   |
| Chlorobenzene                   | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Ethylbenzene                    | < 7.74E-06  | < 7.46E-06  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 7.54E-06 |
| Styrene                         | < 7.74E-06  | 1.79E-06 J  | < 7.98E-06  | < 7.40E-06  | < 7.50E-06  | < 7.15E-06  | < 6.59E-06 |
| Xylenes (total)                 | 1.55E-06 J  | 1.34E-06 J  | < 7.98E-06  | 4.44E-07 J  | 4.50E-07 J  | < 7.15E-06  | < 3.15E-06 |
| 2-Chloroethyl vinyl ether       | < 3.10E-05  | < 2.98E-05  | < 3.19E-05  | < 2.96E-05  | < 3.00E-05  | < 2.86E-05  | < 3.02E-05 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, AL  
SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS  
AFTERBURNER DISCHARGE STACK**

**TEST DATA:**

|                 |           |           |           |           |           |           |                        |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|
| Test run number | 3         | 3         | 3         | 3         | 3         | 3         | 3                      |
| Test location   | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET    | OUTLET                 |
| Test date       | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96  | 02-04-96               |
| Test time       | 1418-1458 | 1503-1543 | 1600-1640 | 1652-1750 | 1802-1842 | 1910-1950 |                        |
| Test tube pair  | 1         | 2         | 3         | 4         | 5         | 6         | AVERAGE <sup>(2)</sup> |

**VOST EMISSIONS (g/sec):**

|                                 |             |             |             |             |             |             |            |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Chloromethane (Methyl Chloride) | 1.01E-05 J  | 8.10E-06    | 1.47E-05    | 6.16E-06    | 8.70E-05 E  | 4.50E-05 E  | 2.85E-05   |
| Bromomethane (Methyl Bromide)   | 2.65E-06 JB | 4.45E-06 B  | 1.57E-06    | 1.62E-06    | 4.92E-06    | 6.48E-06    | 3.62E-06   |
| Vinyl Chloride                  | < 1.95E-06  | < 1.88E-06  | < 2.01E-06  | < 1.87E-06  | < 1.89E-06  | < 1.80E-06  | < 1.90E-06 |
| Chloroethane (Ethyl Chloride)   | < 1.95E-06  | < 1.88E-06  | < 2.01E-06  | < 1.87E-06  | < 1.89E-06  | < 1.80E-06  | < 1.90E-06 |
| Methylene chloride              | 2.71E-06 B  | 1.70E-06 B  | 1.52E-06 JB | 1.47E-06 JB | 2.16E-06 JB | 1.71E-06 B  | 1.88E-06   |
| Acetone                         | 5.29E-05    | 4.72E-05    | 3.13E-05 J  | 5.87E-05 J  | 4.14E-05    | 2.79E-05    | 4.32E-05   |
| Carbon Disulfide                | 2.15E-07 J  | 2.44E-07 J  | 1.41E-07 J  | 1.31E-07 J  | < 9.45E-07  | 1.08E-07 J  | < 2.97E-07 |
| 1,1-Dichloroethene              | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| 1,1-Dichloroethane              | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| 1,2-Dichloroethene (trans)      | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Chloroform                      | 2.53E-07 J  | 2.53E-07 J  | 2.53E-07 J  | 2.53E-07 J  | 2.53E-07 J  | 2.53E-07 J  | 2.53E-07   |
| 1,2-Dichloroethane (EDC)        | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| 2-Butanone (MEK)                | < 1.95E-05  | < 1.88E-05  | < 2.01E-05  | < 1.87E-05  | < 1.89E-05  | < 1.80E-05  | < 1.90E-05 |
| 1,1,1-Trichloroethane (TCA)     | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Carbon Tetrachloride            | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Vinyl acetate                   | < 3.90E-06  | < 3.76E-06  | < 4.02E-06  | < 3.73E-06  | < 3.78E-06  | < 3.60E-06  | < 3.80E-06 |
| Bromodichloromethane            | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| 1,2-Dichloropropane             | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| cis-1,3-Dichloropropene         | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Trichloroethene (TCE)           | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Dibromodichloromethane          | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| 1,1,2-Trichloroethane           | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Benzene                         | 5.46E-07 JB | 1.15E-06 JB | 4.63E-07 JB | 4.66E-07 JB | 3.59E-07 JB | 3.24E-07 JB | 5.51E-07   |
| trans-1,3-Dichloropropene       | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Bromoform                       | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| 4-Methyl-2-Pentanone (MIBK)     | < 1.95E-05  | < 1.88E-05  | < 2.01E-05  | < 1.87E-05  | < 1.89E-05  | < 1.80E-05  | < 1.90E-05 |
| 2-Hexanone                      | < 1.95E-05  | < 1.88E-05  | < 2.01E-05  | < 1.87E-05  | < 1.89E-05  | < 1.80E-05  | < 1.90E-05 |
| Tetrachloroethene (PCE)         | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| 1,1,2,2-Tetrachloroethane       | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Toluene                         | 2.15E-07 J  | 4.70E-07    | 2.01E-07 J  | 1.49E-07 J  | 1.32E-07 J  | 9.00E-08 J  | 2.10E-07   |
| Chlorobenzene                   | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Ethylbenzene                    | < 9.75E-07  | < 9.40E-07  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 9.50E-07 |
| Styrene                         | < 9.75E-07  | 2.26E-07 J  | < 1.01E-06  | < 9.33E-07  | < 9.45E-07  | < 9.00E-07  | < 8.31E-07 |
| Xylenes (total)                 | 1.95E-07 J  | 1.69E-07 J  | < 1.01E-06  | 5.60E-08 J  | 5.67E-08 J  | < 9.00E-07  | < 3.97E-07 |
| 2-Chloroethyl vinyl ether       | < 3.90E-06  | < 3.76E-06  | < 4.02E-06  | < 3.73E-06  | < 3.78E-06  | < 3.60E-06  | < 3.80E-06 |

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E = Estimated value above the detection limit.

(2) Detection limit values included in overall average.

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF METALS TEST DATA AND TEST RESULTS**

**TEST DATA**

|                  | T1                           | T2        | T3        |
|------------------|------------------------------|-----------|-----------|
| Test run number  | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Test location    |                              |           |           |
| Test date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Test time period | 1834-0103                    | 1406-2011 | 1415-2026 |

**SAMPLING DATA**

|                                                   |          |          |          |
|---------------------------------------------------|----------|----------|----------|
| Sampling duration, min.                           | 320.0    | 320.0    | 320.0    |
| Nozzle diameter, in.                              | 0.586    | 0.586    | 0.586    |
| Cross sectional nozzle area, sq.ft.               | 0.001873 | 0.001873 | 0.001873 |
| Barometric pressure, in. Hg                       | 29.73    | 29.59    | 30.28    |
| Avg. orifice press. diff., in H <sub>2</sub> O    | 0.60     | 0.57     | 0.46     |
| Avg. dry gas meter temp., deg F                   | 53       | 43       | 44       |
| Avg. abs. dry gas meter temp., deg. R             | 513      | 503      | 504      |
| Total liquid collected by train, ml               | 262.6    | 255.9    | 196.1    |
| Std. vol. of H <sub>2</sub> O vapor coll., cu.ft. | 12.4     | 12.0     | 9.2      |
| Dry gas meter calibration factor                  | 0.9958   | 0.9958   | 0.9939   |
| Sample vol. at meter cond., dcf                   | 133.154  | 130.320  | 118.896  |
| Sample vol. at std. cond., dscf <sup>(1)</sup>    | 135.801  | 134.777  | 125.265  |
| Percent of isokinetic sampling                    | 103.3    | 105.6    | 103.1    |

**GAS STREAM COMPOSITION DATA**

|                                                     |       |       |       |
|-----------------------------------------------------|-------|-------|-------|
| CO <sub>2</sub> , % by volume, dry basis            | 5.7   | 5.8   | 6.1   |
| O <sub>2</sub> , % by volume, dry basis             | 12.1  | 11.9  | 11.9  |
| N <sub>2</sub> , % by volume, dry basis             | 82.2  | 82.3  | 82.0  |
| Molecular wt. of dry gas, lb/lb mole                | 29.4  | 29.4  | 29.5  |
| H <sub>2</sub> O vapor in gas stream, prop. by vol. | 0.083 | 0.082 | 0.069 |
| Mole fraction of dry gas                            | 0.917 | 0.918 | 0.931 |
| Molecular wt. of wet gas, lb/lb mole                | 28.4  | 28.5  | 28.7  |

**GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA**

|                                                          |       |       |       |
|----------------------------------------------------------|-------|-------|-------|
| Static pressure, in. Hg                                  | -0.10 | -0.10 | -0.10 |
| Absolute pressure, in. Hg                                | 29.72 | 29.58 | 30.27 |
| Avg. temperature, deg. F                                 | 1681  | 1646  | 1638  |
| Avg. absolute temperature, deg.R                         | 2141  | 2106  | 2098  |
| Pitot tube coefficient                                   | 0.84  | 0.84  | 0.84  |
| Total number of traverse points                          | 16    | 16    | 16    |
| Avg. gas stream velocity, ft./sec.                       | 16.3  | 15.6  | 14.3  |
| Stack/duct cross sectional area, sq.ft.                  | 4.59  | 4.59  | 4.59  |
| Avg. gas stream volumetric flow, wacf/min.               | 4480  | 4290  | 3920  |
| Avg. gas stream volumetric flow, dscf/min <sup>(1)</sup> | 1010  | 980   | 930   |

<sup>(1)</sup> Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF METALS TEST DATA AND TEST RESULTS**

**TEST DATA**

|                  | T1                           | T2        | T3        |
|------------------|------------------------------|-----------|-----------|
| Test run number  | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Test location    |                              |           |           |
| Test date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Test time period | 1834-0103                    | 1406-2011 | 1415-2026 |

**METALS LABORATORY REPORT DATA, ug**

|                |        |        |         |
|----------------|--------|--------|---------|
| Antimony (Sb)  | 4.20   | 1.00   | < 11.30 |
| Arsenic (As)   | < 7.65 | < 7.70 | < 7.60  |
| Barium (Ba)    | 22.04  | 0.29   | 0.22    |
| Beryllium (Be) | 0.02   | < 0.03 | < 0.03  |
| Cadmium (Cd)   | 1.60   | 0.79   | < 0.70  |
| Chromium (Cr)  | 43.70  | 44.52  | 31.89   |
| Lead (Pb)      | 17.30  | 3.70   | 2.50    |
| Mercury (Hg)   | 0.14   | 0.25   | 0.03    |
| Nickel (Ni)    | 10.53  | 12.70  | 2.60    |
| Selenium (Se)  | < 8.85 | < 8.90 | < 8.80  |
| Silver (Ag)    | < 2.25 | < 2.25 | < 2.24  |
| Thallium (Tl)  | < 7.80 | < 7.80 | < 7.80  |

**METALS CONCENTRATIONS, ug/dscm <sup>(1)</sup>**

|                |            |            |            |
|----------------|------------|------------|------------|
| Antimony (Sb)  | 1.09E+00   | 2.61E-01   | < 3.19E+00 |
| Arsenic (As)   | < 1.99E+00 | < 2.02E+00 | < 2.14E+00 |
| Barium (Ba)    | 5.73E+00   | 7.60E-02   | 6.20E-02   |
| Beryllium (Be) | 5.20E-03   | < 6.55E-03 | < 7.05E-03 |
| Cadmium (Cd)   | 4.16E-01   | 2.07E-01   | < 1.97E-01 |
| Chromium (Cr)  | 1.14E+01   | 1.17E+01   | 8.99E+00   |
| Lead (Pb)      | 4.50E+00   | 9.70E-01   | 7.05E-01   |
| Mercury (Hg)   | 3.64E-02   | 6.42E-02   | 8.46E-03   |
| Nickel (Ni)    | 2.74E+00   | 3.33E+00   | 7.33E-01   |
| Selenium (Se)  | < 2.30E+00 | < 2.33E+00 | < 2.48E+00 |
| Silver (Ag)    | < 5.84E-01 | < 5.90E-01 | < 6.32E-01 |
| Thallium (Tl)  | < 2.03E+00 | < 2.04E+00 | < 2.20E+00 |

**METALS CONCENTRATIONS, lb/dscf <sup>(1)</sup>**

|                |            |            |            |
|----------------|------------|------------|------------|
| Antimony (Sb)  | 6.81E-11   | 1.63E-11   | < 1.99E-10 |
| Arsenic (As)   | < 1.24E-10 | < 1.26E-10 | < 1.34E-10 |
| Barium (Ba)    | 3.58E-10   | 4.74E-12   | 3.87E-12   |
| Beryllium (Be) | 3.25E-13   | < 4.09E-13 | < 4.40E-13 |
| Cadmium (Cd)   | 2.60E-11   | 1.29E-11   | < 1.23E-11 |
| Chromium (Cr)  | 7.09E-10   | 7.28E-10   | 5.61E-10   |
| Lead (Pb)      | 2.81E-10   | 6.05E-11   | 4.40E-11   |
| Mercury (Hg)   | 2.27E-12   | 4.01E-12   | 5.28E-13   |
| Nickel (Ni)    | 1.71E-10   | 2.08E-10   | 4.58E-11   |
| Selenium (Se)  | < 1.44E-10 | < 1.46E-10 | < 1.55E-10 |
| Silver (Ag)    | < 3.64E-11 | < 3.68E-11 | < 3.94E-11 |
| Thallium (Tl)  | < 1.27E-10 | < 1.28E-10 | < 1.37E-10 |

<sup>(1)</sup> Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)



**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF METALS TEST DATA AND TEST RESULTS**

**TEST DATA**

Test run number  
Test location  
Test date  
Test time period

| T1                           | T2        | T3        |
|------------------------------|-----------|-----------|
| <b>AFTERBURNER DISCHARGE</b> |           |           |
| 01-31-96                     | 02-02-96  | 02-04-96  |
| 1834-0103                    | 1406-2011 | 1415-2026 |

**METALS MASS EMISSION RATES, lb/hr**

|                |            |            |            |
|----------------|------------|------------|------------|
| Antimony (Sb)  | 4.11E-06   | 9.54E-07   | < 1.11E-05 |
| Arsenic (As)   | < 7.50E-06 | < 7.38E-06 | < 7.46E-06 |
| Barium (Ba)    | 2.16E-05   | 2.78E-07   | 2.16E-07   |
| Beryllium (Be) | 1.96E-08   | < 2.40E-08 | < 2.45E-08 |
| Cadmium (Cd)   | 1.57E-06   | 7.57E-07   | < 6.87E-07 |
| Chromium (Cr)  | 4.28E-05   | 4.27E-05   | 3.13E-05   |
| Lead (Pb)      | 1.70E-05   | 3.55E-06   | 2.45E-06   |
| Mercury (Hg)   | 1.37E-07   | 2.35E-07   | 2.95E-08   |
| Nickel (Ni)    | 1.03E-05   | 1.22E-05   | 2.55E-06   |
| Selenium (Se)  | < 8.68E-06 | < 8.53E-06 | < 8.64E-06 |
| Silver (Ag)    | < 2.20E-06 | < 2.16E-06 | < 2.20E-06 |
| Thallium (Tl)  | < 7.65E-06 | < 7.48E-06 | < 7.66E-06 |

**ALABAMA ARMY AMMUNITION PLANT  
CHILDERSBURG, ALABAMA  
HOT GAS TEST PROGRAM  
SUMMARY OF HEXAVALENT CHROMIUM TEST DATA AND TEST RESULTS**

**TEST DATA:**

|                  | T1                           | T2        | T3        |
|------------------|------------------------------|-----------|-----------|
| Test run number  |                              |           |           |
| Test location    | <b>AFTERBURNER DISCHARGE</b> |           |           |
| Test date        | 01-31-96                     | 02-02-96  | 02-04-96  |
| Test time period | 1837-0127                    | 1404-2043 | 1416-2050 |

**SAMPLING DATA:**

|                                                   |         |         |         |
|---------------------------------------------------|---------|---------|---------|
| Sampling duration, min.                           | 360.0   | 360.0   | 360.0   |
| Nozzle diameter, in.                              | 0.586   | 0.586   | 0.586   |
| Barometric pressure, in. Hg                       | 29.73   | 29.59   | 30.28   |
| Avg. orifice press. diff., in H <sub>2</sub> O    | 0.53    | 0.52    | 0.45    |
| Avg. dry gas meter temp., deg F                   | 53.11   | 49.00   | 44.17   |
| Avg. abs. dry gas meter temp., deg. R             | 513     | 509     | 504     |
| Total liquid collected by train, ml               | 288.9   | 276.5   | 229.5   |
| Std. vol. of H <sub>2</sub> O vapor coll., cu.ft. | 13.6    | 13.0    | 10.8    |
| Dry gas meter calibration factor                  | 1.002   | 1.002   | 1.002   |
| Sample vol. at meter cond., dcf                   | 158.264 | 157.762 | 145.159 |
| Sample vol. at std. cond., dscf <sup>(1)</sup>    | 162.292 | 162.313 | 154.262 |
| Percent of isokinetic sampling                    | 104.0   | 104.2   | 106.1   |

**GAS STREAM COMPOSITION DATA:**

|                                                     |       |       |       |
|-----------------------------------------------------|-------|-------|-------|
| CO <sub>2</sub> , % by volume, dry basis            | 5.7   | 5.8   | 6.1   |
| O <sub>2</sub> , % by volume, dry basis             | 12.1  | 11.9  | 11.9  |
| CO, % by volume, dry basis                          | 0.0   | 0.0   | 0.0   |
| N <sub>2</sub> , % by volume, dry basis             | 82.2  | 82.3  | 82.0  |
| Molecular wt. of dry gas, lb/lb mole                | 29.4  | 29.4  | 29.5  |
| H <sub>2</sub> O vapor in gas stream, prop. by vol. | 0.077 | 0.074 | 0.065 |
| Mole fraction of dry gas                            | 0.923 | 0.926 | 0.935 |
| Molecular wt. of wet gas, lb/lb mole                | 28.5  | 28.6  | 28.7  |

**GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA:**

|                                                           |        |        |        |
|-----------------------------------------------------------|--------|--------|--------|
| Static pressure, in. H <sub>2</sub> O                     | -0.10  | -0.10  | -0.10  |
| Static pressure, in. Hg                                   | -0.007 | -0.007 | -0.007 |
| Absolute pressure, in. Hg                                 | 29.72  | 29.58  | 30.27  |
| Avg. temperature, deg. F                                  | 1546   | 1513   | 1493   |
| Avg. absolute temperature, deg.R                          | 2006   | 1973   | 1953   |
| Pitot tube coefficient                                    | 0.84   | 0.84   | 0.84   |
| Total number of traverse points                           | 12     | 12     | 12     |
| Avg. gas stream velocity, ft./sec.                        | 16.0   | 15.7   | 14.1   |
| Stack/duct cross sectional area, sq.ft.                   | 4.59   | 4.59   | 4.59   |
| Avg. gas stream volumetric flow, wacf/min.                | 4400   | 4330   | 3870   |
| Avg. gas stream volumetric flow, dscf/min. <sup>(1)</sup> | 1060   | 1060   | 990    |

**LABORATORY REPORT DATA <sup>(2)</sup>**

|                                             |       |       |       |
|---------------------------------------------|-------|-------|-------|
| Hexavalent Chromium (Cr <sup>+6</sup> ), ug | 58.94 | 61.19 | 45.37 |
|---------------------------------------------|-------|-------|-------|

**HEXAVALENT CHROMIUM EMISSIONS**

|                           |          |          |          |
|---------------------------|----------|----------|----------|
| Concentration, lb/dscf    | 8.01E-10 | 8.31E-10 | 6.48E-10 |
| Concentration, ug/dscm    | 12.83    | 13.31    | 10.39    |
| Mass emission rate, lb/hr | 5.10E-05 | 5.29E-05 | 3.85E-05 |

(1) Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)

(2) Per EPA Cr<sup>+6</sup> method the laboratory results are blank corrected. A blank KOH value of 2.4 ug. per liter was used.

NOTE: The Cr<sup>+6</sup> values reported above may not be truly representative. The Cr<sup>+6</sup> values exceed the total chromium values obtained using the multi-metals test train. The Cr<sup>+6</sup> test train has not been validated by EPA for use on sources exceeding 300° F.

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**APPENDIX I**

**SOURCE EMISSIONS LABORATORY ANALYTICAL  
DATA REPORTS WITHOUT RAW DATA**

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**SOURCE EMISSIONS LABORATORY ANALYTICAL DATA REPORTS**

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**SEMIVOLATILE ORGANICS  
(TRIANGLE LABORATORY)**

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**CASE NARRATIVE**

**Analysis of Samples for the Presence of  
Semivolatile Hydrocarbons by  
High-Resolution Gas Chromatography / Low-Resolution Mass Spectrometry**

**METHOD 8270A Rev. 1 (7/92)**

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**Date :** March 20, 1996

**Client ID :** Roy F. Weston

**TLI Project Number :** 36062A

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**TRIANGLE LABORATORIES, INC.**  
**CASE NARRATIVE**

**March 20, 1996**  
**36062A**

**Objective:** Analysis of three M23 dioxin extracts for Method 8270 Table 2 (TB2) semivolatile compounds and Tentatively Identified Compounds (TICs).

**Method:**

Two M23 train samples were received by Triangle Laboratories, Inc. on ice at 11°C on February 2, 1996. An additional three M23 train samples were received on February 6, 1996 at 4°C. all samples were received in good condition. The samples were stored in a cooler at 4°C prior to extraction. The M23 samples were extracted for the dioxin analysis. The resulting extracts were split 50:50 with fifty percent of each extract archived. Please note that this project contains the semivolatile analysis data for only three of the original five archived dioxin extracts. A method blank was prepared by utilizing one milliliter of toluene. Each extract was concentrated to a final volume of 1.0 mL for the semivolatile analysis. The analysis is based on the guidelines of Method 8270A Rev. 1 (7/92). The results reported relate only to the items tested.

The internal standards, 1,4-dichlorobenzene-d<sub>4</sub>, naphthalene-d<sub>8</sub>, acenaphthene-d<sub>10</sub>, phenanthrene-d<sub>10</sub>, chrysene-d<sub>12</sub>, and perylene-d<sub>12</sub> were added to the extracts such that the final internal standard concentration was 40 ug/mL immediately prior to analysis by GC/MS.

The GC/MS analysis conditions are listed below:

**GC Conditions:**

|              |                                                                                               |
|--------------|-----------------------------------------------------------------------------------------------|
| Column:      | J&W DB5-625, 30m x .32mm x 1µm                                                                |
| Program:     | 35C, ramp at 12C/min to 285C, hold for 2 min.<br>ramp at 8.5C/min to 315 C, hold for 6.5 min. |
| Carrier Gas: | Helium                                                                                        |

**MS Conditions:**

|             |                                            |
|-------------|--------------------------------------------|
| Instrument: | HP MSD, Chemsystem and Target data systems |
| Scan:       | 35-550 amu at 1.67 scan/sec                |
| Interface:  | Capillary, Injector: 250C, Detector: 275C  |

**Report:**

Enclosed with the case narrative are the sample identification index, project summary sheets, client and TLI chain of custody sheets, wet laboratory extraction information sheets, GC/MS tracking forms, and analytical run logs. The sample identification index correlates the client sample name, TLI sample number and the analytical file name for the each sample. The project summary sheets list the amounts of analytes detected in gray and list the estimated detection limits in parentheses for analytes which were not detected.

The data are reported as quantitation reports, chromatograms, interim reports, and spectra of detected target analytes and TICs. The quantitation report header lists the TLI project number, analysis method, instrument sample file name, and client sample name. The client project number, TLI sample number, calibration file, dilution factor, and date received, extracted, and analyzed are

also listed in the quantitation report header. The response factors used for all calculations are from the continuing calibration listed in the header. All initial and continuing calibration data are located in the back of the data package. The amount reported for each target analyte detected in the samples is reported in total ug. The retention time (RT) will be listed for all internal standards and analytes which are detected. If a target analyte is not detected, it will be flagged with a "U" and a detection limit will be listed. Estimated detection limits are calculated using an area of 10,000 for all analytes which were not found in the samples. The estimated detection limits reported are the average detection limits achievable over time on an instrument type. The actual detection limit for a given compound on a given day may vary from the estimate reported. The quantitation limit for all analytes is half of the low point of the initial calibration adjusted for dilution when appropriate. Below this point the calibration cannot be considered to be linear. Any amounts reported at a level below the quantitation limit will be flagged with a "J" and should be considered estimated. If a target analyte is found at a level exceeding the upper calibration limit, it will be flagged with an "E" and should also be considered estimated. Any analytes flagged with a "B" on the sample topsheets were detected in the associated laboratory blank. All target analytes are quantitated against the internal standard preceding them on the target analyte list.

In addition to the quantitation report, a tentatively identified compound report is also present. The TIC report includes the name, retention time, area, internal standard retention time and area, and the amount in total ug. The TIC amounts should be considered estimates because they are calculated using the total ion current areas of the internal standard. These TICs were searched against the NBS library and the best three matches were obtained. From this information a tentative identification was assigned. All of the spectral searches are included in the data package behind the spectra of target analytes.

Immediately following the TIC report are two pages which comprise the total ion chromatograms. Labeled internal and surrogate standards present in the sample have their identifications and retention time printed above their peak on the chromatogram. The chromatogram is followed by the interim report. On the interim report a \$ is indicative of a surrogate standard and a \* represents an internal standard. The interim report from the instrument is followed by the target spectra of detected compounds. Four spectral plots are included for each compound: a raw spectrum of the peak, a background subtracted version of the same spectrum, a library spectrum of the compound, and a plot showing the percent difference between the library spectrum and the background subtracted spectrum. Extracted ion current profiles are plotted on the right-hand side of the page showing the quantitation mass and one or two other prominent ions known to be present in target compound as they appear in the sample peak.

#### Results:

The extracts were analyzed within the Method 8270 holding times.

Please note that while Method 8270 Table 2 lists bis(2-chloroisopropyl)ether, this compound is not listed on the quantitation reports. The reports list 2,2'-oxybis(1-chloropropane) which is a structural isomer. These compounds coelute and are considered equivalent. Please note that the target analyte n-nitrosodiphenylamine cannot be distinguished from diphenylamine.



These dioxin extracts were reanalyzed per client request for Method 8270 Table 2 compounds. The dilution factors of two result from the dioxin extract split. It is important to note that Method 8270 nor 8270A do not specifically address air matrices. Likewise, the analytical columns used in semivolatile GC/MS are extremely sensitive to the compound toluene, which is present in dioxin extracts. The toluene peak can be seen in the sample chromatograms at approximately 4.5 minutes. Toluene may not be the solvent of choice for optimum semivolatile analyte extractions and therefore recoveries.

These samples were originally extracted for the dioxin analysis only, therefore no semivolatile surrogate standards were spiked onto these samples prior to extraction. There is no measurement for extraction efficiency as a result.

The internal standard areas for chrysene-d<sub>12</sub> and perylene-d<sub>12</sub> were above Method 8270 quality control limits in all samples except COE-HG-AFOUT-M23-R1. The internal standard area for perylene-d<sub>12</sub> was above Method 8270 criteria in sample COE-HG-AFOUT-M23-R1. These internal standards are flagged with "IS High" and the amounts quantitated against them should be considered estimated.

Please note that one milliliter of toluene was used as the method blank because the archived portion of the laboratory blank extracted along side the samples had been used. An arbitrary dilution factor of two has been applied to this blank for the purposes of consistency. This blank renders no information in regards to the extraction process nor laboratory contamination potential at the actual time of the original extraction. No target analytes were detected in this blank.

The target analyte benzyl alcohol was found at amounts above the upper calibration limit of 320 micrograms. Per client request dilutions were not performed for this analyte.

The majority of TICs found in these samples were various aromatic compounds.

#### Sample Calculations:

$$\text{Response Factor, RF} = \frac{\text{Area analyte} \times \text{Amt IS}}{\text{Area IS} \times \text{Amt analyte}}$$

$$\text{Amount ug} = \frac{\text{Area analyte} \times \text{Amt IS} \times \text{DF}}{\text{Area IS} \times \text{RF}}$$

$$\text{TIC Amount ug} = \frac{\text{Total Ion Current Area analyte} \times \text{Amt IS} \times \text{DF}}{\text{Total Ion Current Area IS}}$$

TRIANGLE LABORATORIES, INC.  
CASE NARRATIVE

March 20, 1996  
36062A

Where:

Amt IS = amount of internal standard = 40 ug

Amt analyte in the ccal = amount of analyte in the continuing calibration = 50 ug

DF = dilution factor

The data reported has been judged to be valid and in compliance with the guidelines of Method 8270A Rev. 1 (7/92) except as noted above. Should you have any questions about this project, please feel free to contact our Project Scientist, Selena Armistead, at (919) 544-5729 Ext. 269.

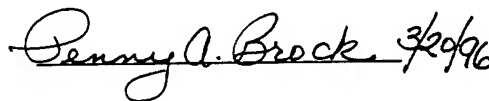
For Triangle Laboratories, Inc.,

Report Preparation:

Quality Control:

 03/20/96

Report Preparation Chemist  
Amy Wall

 3/20/96

Report Preparation Chemist  
Penny A. Brock

The total number of pages in this data package is 155.

Triangle Laboratories of RTP  
Sample Identification Index for Project: 36062A

| Client Id:           | TLI Id:      | File Name: |
|----------------------|--------------|------------|
| COE-HG-AFTOUT-M23-R1 | 113-204-1A-E | YL525      |
| COE-HG-AFTOUT-M23-R2 | 113-217-1A-E | YL526      |
| COE-HG-AFTOUT-M23-BT | 113-217-3A-E | YL527      |
| SBLK 020896          | SBLK 020896  | YL523      |

**Triangle Laboratories of RTP**  
**Project Summary for Project 36062A**

|            |                          |                          |                          |                 |
|------------|--------------------------|--------------------------|--------------------------|-----------------|
| Client ID: | COE-HG-AFT<br>OUT-M23-R1 | COE-HG-AFT<br>OUT-M23-R2 | COE-HG-AFT<br>OUT-M23-BT | SBLK 02089<br>6 |
| Filename : | YL525                    | YL526                    | YL527                    | YL523           |
| TLI Id :   | 113-204-1A-E             | 113-217-1A-E             | 113-217-3A-E             | SBLK 020896     |
| Matrix :   | M23                      | M23                      | M23                      | TOLUENE         |
| Units :    | ug                       | ug                       | ug                       | ug              |

|                              |        |         |         |        |
|------------------------------|--------|---------|---------|--------|
| Phenol                       | 4.36   | 8.01    | 9.08    | (2.87) |
| bis(2-Chloroethyl)ether      | (4.00) | (3.81)  | (3.72)  | (3.42) |
| 2-Chlorophenol               | (2.40) | (2.29)  | (2.24)  | (2.06) |
| 1,3-Dichlorobenzene          | (2.04) | (1.94)  | (1.90)  | (1.75) |
| 1,4-Dichlorobenzene          | (1.95) | (1.86)  | (1.81)  | (1.67) |
| 1,2-Dichlorobenzene          | (2.09) | (1.99)  | (1.95)  | (1.79) |
| Benzyl alcohol               | 378.52 | 1521.61 | 2515.21 | (6.51) |
| 2,2'-oxybis(1-Chloropropane) | (4.11) | (3.92)  | (3.83)  | (3.52) |
| 2-Methylphenol               | (3.82) | (3.64)  | (3.56)  | (3.28) |
| 3/4-Methylphenol             | (3.76) | (3.59)  | (3.50)  | (3.23) |
| N-Nitroso-di-n-propylamine   | (5.05) | (4.82)  | (4.70)  | (4.33) |
| Hexachloroethane             | (4.09) | (3.89)  | (3.80)  | (3.50) |
| Nitrobenzene                 | (2.53) | (2.52)  | (2.63)  | (2.26) |
| Isophorone                   | (1.42) | (1.42)  | (1.48)  | (1.27) |
| 2-Nitrophenol                | (3.70) | (3.68)  | (3.84)  | (3.30) |
| 2,4-Dimethylphenol           | (3.12) | (3.10)  | (3.24)  | (2.78) |
| bis(2-Chloroethoxy)methane   | (3.16) | (3.14)  | (3.28)  | (2.82) |
| Benzoic acid                 | 50.02  | 66.93   | 48.28   | (3.72) |
| 2,4-Dichlorophenol           | (2.66) | (2.64)  | (2.76)  | (2.37) |
| 1,2,4-Trichlorobenzene       | (2.16) | (2.15)  | (2.24)  | (1.93) |
| Naphthalene                  | 1.34   | 1.63    | 1.64    | (0.76) |
| 4-Chloroaniline              | (2.05) | (2.04)  | (2.13)  | (1.83) |
| Hexachlorobutadiene          | (2.60) | (2.59)  | (2.70)  | (2.32) |
| 4-Chloro-3-methylphenol      | (3.25) | (3.23)  | (3.38)  | (2.90) |
| 2-Methylnaphthalene          | (1.26) | (1.25)  | (1.31)  | (1.13) |
| Hexachlorocyclopentadiene    | (2.34) | (2.30)  | (2.35)  | (2.12) |
| 2,4,6-Trichlorophenol        | (2.92) | (2.87)  | (2.93)  | (2.65) |
| 2,4,5-Trichlorophenol        | (2.82) | (2.78)  | (2.83)  | (2.55) |
| 2-Chloronaphthalene          | (1.17) | (1.15)  | (1.17)  | (1.06) |
| 2-Nitroaniline               | (4.32) | (4.25)  | (4.33)  | (3.91) |
| Dimethylphthalate            | (0.96) | (0.95)  | (0.96)  | (0.87) |
| 2,6-Dinitrotoluene           | (4.13) | (4.07)  | (4.14)  | (3.74) |
| 2,4-Dinitrotoluene           | (2.69) | (2.65)  | (2.70)  | (2.44) |
| Acenaphthylene               | (0.75) | (0.74)  | (0.75)  | (0.68) |
| 3-Nitroaniline               | (3.76) | (3.69)  | (3.76)  | (3.40) |

( )-Estimated Detection Limit      Page 1

**Triangle Laboratories of RTP**  
**Project Summary for Project 36062A**

|            |                          |                          |                          |                 |
|------------|--------------------------|--------------------------|--------------------------|-----------------|
| Client ID: | COE-HG-AFT<br>OUT-M23-R1 | COE-HG-AFT<br>OUT-M23-R2 | COE-HG-AFT<br>OUT-M23-BT | SBLK 02089<br>6 |
| Filename : | YL525                    | YL526                    | YL527                    | YL523           |
| TLI Id :   | 113-204-1A-E             | 113-217-1A-E             | 113-217-3A-E             | SBLK 020896     |
| Matrix :   | M23                      | M23                      | M23                      | TOLUENE         |
| Units :    | ug                       | ug                       | ug                       | ug              |

|                            |        |        |        |        |
|----------------------------|--------|--------|--------|--------|
| Acenaphthene               | (1.34) | (1.32) | (1.34) | (1.21) |
| 2,4-Dinitrophenol          | (8.53) | (8.39) | (8.55) | (7.72) |
| 4-Nitrophenol              | (4.05) | (3.99) | (4.06) | (3.67) |
| Dibenzofuran               | (0.78) | (0.77) | (0.78) | (0.71) |
| Diethylphthalate           | 7.80   | 3.61   | 1.29   | (0.67) |
| 4-Chlorophenyl-phenylether | (1.86) | (1.83) | (1.86) | (1.68) |
| Fluorene                   | (1.02) | (1.00) | (1.02) | (0.92) |
| 4-Nitroaniline             | (3.68) | (3.62) | (3.68) | (3.33) |
| 4,6-Dinitro-2-methylphenol | (4.65) | (4.44) | (4.56) | (4.77) |
| N-Nitrosodiphenylamine     | (1.50) | (1.43) | (1.47) | (1.53) |
| 4-Bromophenyl-phenylether  | (2.15) | (2.06) | (2.11) | (2.21) |
| Hexachlorobenzene          | (1.54) | (1.47) | (1.51) | (1.58) |
| Pentachlorophenol          | (2.69) | (2.57) | (2.64) | (2.76) |
| Phenanthrene               | (0.59) | (0.56) | (0.58) | (0.60) |
| Anthracene                 | 0.35   | (0.57) | (0.58) | (0.61) |
| Di-n-butylphthalate        | 21.48  | 15.26  | 8.30   | (0.35) |
| Fluoranthene               | (0.45) | (0.43) | (0.44) | (0.46) |
| Pyrene                     | (0.33) | (0.30) | (0.30) | (0.32) |
| Butylbenzylphthalate       | 0.39   | (0.53) | (0.52) | (0.57) |
| 3,3'-Dichlorobenzidine     | (0.94) | (0.85) | (0.84) | (0.92) |
| bis(2-Ethylhexyl)phthalate | 16.27  | 18.01  | 4.49   | (0.42) |
| Benzo(a)anthracene         | (0.35) | (0.32) | (0.31) | (0.34) |
| Chrysene                   | (0.38) | (0.34) | (0.34) | (0.37) |
| Di-n-octylphthalate        | (0.25) | (0.28) | (0.31) | (0.24) |
| Benzo(b)fluoranthene       | (0.34) | (0.39) | (0.42) | (0.33) |
| Benzo(k)fluoranthene       | (0.35) | (0.40) | (0.43) | (0.34) |
| Benzo(a)pyrene             | (0.35) | (0.40) | (0.43) | (0.34) |
| Indeno(1,2,3-cd)pyrene     | (0.36) | (0.40) | (0.44) | (0.35) |
| Dibenz(a,h)anthracene      | (0.48) | (0.53) | (0.58) | (0.46) |
| Benzo(g,h,i)perylene       | (0.42) | (0.47) | (0.51) | (0.40) |

# Custody Transfer Record/Lab Work Request

PCDD/PCDF

WESTON Analytics Use Only

|                                                         |                |                    |        |       |        |       |
|---------------------------------------------------------|----------------|--------------------|--------|-------|--------|-------|
| Client: <u>CDF-HQ-GAS</u>                               |                | Refrigerator #     | Liquid | Solid | Liquid | Solid |
| Est. Final Proj. Sampling Date                          |                | #/Type Container   |        |       |        |       |
| Work Order # <u>02281-012-012-1200</u>                  |                | Volume             |        |       |        |       |
| Project Contact/Phone # <u>J.H. Dineen 603-701-7201</u> |                | Preservatives      |        |       |        |       |
| All Project Manager <u>Selena Armstrong</u>             |                | ANALYSES REQUESTED |        |       |        |       |
| Q# <u>500</u>                                           | Del <u>500</u> | TAT                |        |       |        |       |
| Date Rec'd                                              | Date Due       |                    |        |       |        |       |
| Account #                                               |                |                    |        |       |        |       |

| MATRIX CODES: | Lab ID                    | Client ID/Description | Matrix QC Chosen (✓) |     | Date Collected | Time Collected | WESTON Analytics Use Only |     |     |      |       |       |  |  |
|---------------|---------------------------|-----------------------|----------------------|-----|----------------|----------------|---------------------------|-----|-----|------|-------|-------|--|--|
|               |                           |                       | MS                   | MSD |                |                | VOA                       | BNs | PCB | Herb | INORG | Metal |  |  |
| SE - Sediment | CDF-H6-AFTOUT-M23-R1-F1P5 |                       |                      |     | 1/31/96        |                |                           |     |     |      |       |       |  |  |
| SO - Solid    | CDF-H6-AFTOUT-M23-R1-F1LT |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| SL - Sludge   | CDF-H6-AFTOUT-M23-R1-XAD  |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| W - Water     | CDF-H6-AFTOUT-M23-R1-B1P5 |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| O - Oil       | CDF-H6-AFTOUT-M23-R1-TOL  |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| A - Air       | CDF-H6-AFTOUT-M23-R1-B1P5 |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| OS - Drum     | CDF-H6-AFTOUT-M23-R1-TOL  |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| DL - Drum     | CDF-H6-AFTOUT-M23-R1-B1P5 |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| L - EP/TCLP   | CDF-H6-AFTOUT-M23-R1-B1P5 |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| Leachate      | CDF-H6-AFTOUT-M23-R1-B1P5 |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| WI - Wipe     | CDF-H6-AFTOUT-M23-R1-B1P5 |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| X - Other     | CDF-H6-AFTOUT-M23-R1-B1P5 |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |
| F - Fish      | CDF-H6-AFTOUT-M23-R1-B1P5 |                       |                      |     |                |                |                           |     |     |      |       |       |  |  |

|                                                                                          |                               |                            |                         |
|------------------------------------------------------------------------------------------|-------------------------------|----------------------------|-------------------------|
| FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS                                              |                               | DATE/REVISIONS:            |                         |
| Special Instructions:                                                                    | 1. <u>Combine to be used</u>  | 2. <u>with other train</u> | 3. <u>fractions for</u> |
| <p>Analyte site blank<br/>only if contamination<br/>found in blank<br/>train sample.</p> | 4. <u>total run composite</u> | 5. <u></u>                 | 6. <u></u>              |
|                                                                                          | Relinquished by               | Received by                | Time                    |
|                                                                                          | <u>John Smith</u>             | <u>John Smith</u>          | <u>12:00</u>            |
|                                                                                          |                               |                            |                         |

|                 |             |      |      |
|-----------------|-------------|------|------|
| Relinquished by | Received by | Date | Time |
|                 |             |      |      |

|                                                             |   |
|-------------------------------------------------------------|---|
| Discrepancies Between Samples Labels and COC Record? Y or N |   |
| Y                                                           | N |

|                                              |                                             |
|----------------------------------------------|---------------------------------------------|
| WESTON Analytics Use Only                    |                                             |
| Samples were:                                | COC Tape was:                               |
| 1) Shipped or Hand Delivered                 | 1) Present on Outer Package Y or N          |
| 2) Ambient or Chilled                        | 2) Unbroken on Outer Package Y or N         |
| 3) Received in Good Condition Y or N         | 3) Present on Sample Y or N                 |
| 4) Labels Indicate Properly Preserved Y or N | 4) Unbroken on Sample Y or N                |
| 5) Received Within Holding Times Y or N      | COC Record Present Upon Sample Rec'd Y or N |

# Custody Transfer Record/Lab Work Request

[illegible]

# Custody Transfer Record/Lab Work Request

[illegible]



Custody Seal : Absent  
 Chain of Custody : Present  
 Sample Tags : Present  
 Sample Tag Numbers: Listed  
 SMO Forms : N/A

Sample Seals: Absent

TLI Project Number : 36049

Book

Client: RFW01

Roy F. Weston, Inc.

113

Date Received

02/02/96

By

J. J. Weston

Page

Box ICE Temp 11.0 C Carrier and Number FedEx/2350390884

204

| TLI Number                | Matrix    | To LAB   | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE |
|---------------------------|-----------|----------|------------|-----------|------------|-----------|------------|-----------|------------|
| MR/H:CPM                  | Client ID | Location | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  |
| 113-204-1A                | FILTER    |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R1-FILT |           |          |            |           |            |           |            |           |            |
|                           | CO1       |          |            |           |            |           |            |           |            |
| 113-204-1B                | XAD       |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R1-XAD  |           |          |            |           |            |           |            |           |            |
|                           | CO1       |          |            |           |            |           |            |           |            |
| 113-204-1C                | FH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R1-FHS  |           |          |            |           |            |           |            |           |            |
|                           | CO1       |          |            |           |            |           |            |           |            |
| 113-204-1D                | BH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R1-BHS  |           |          |            |           |            |           |            |           |            |
|                           | CO1       |          |            |           |            |           |            |           |            |
| 113-204-1E                | TOLUENE   |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R1-TOL  |           |          |            |           |            |           |            |           |            |
|                           | CO1       |          |            |           |            |           |            |           |            |
| 113-204-2A                | FILTER    |          |            |           |            |           |            |           |            |
| COE-HG-OUT-M23-SB-FILT    |           |          |            |           |            |           |            |           |            |
|                           | CO1       |          |            |           |            |           |            |           |            |
| 113-204-2B                | XAD       |          |            |           |            |           |            |           |            |
| COE-HG-OUT-M23-SB-XAD     |           |          |            |           |            |           |            |           |            |
|                           | CO1       |          |            |           |            |           |            |           |            |
| 113-204-2C                | ACE/MECL2 |          |            |           |            |           |            |           |            |
| COE-HG-OUT-M23-SB-ACE/DCM |           |          |            |           |            |           |            |           |            |
|                           | CO1       |          |            |           |            |           |            |           |            |
| 113-204-2D                | TOLUENE   |          |            |           |            |           |            |           |            |
| COE-HG-OUT-M23-SB-TOL     |           |          |            |           |            |           |            |           |            |
|                           | CO1       |          |            |           |            |           |            |           |            |

Receiving Remarks: Samples received 2/2/96. logged in 2/4/96.

Archive Remarks:

TRIANGLE LABORATORIES, INC.--CHAIN OF CUSTODY--REVISED 02/17/95--

11  
3.20.96

|                               |                       |                            |                            |
|-------------------------------|-----------------------|----------------------------|----------------------------|
| Custody Seal : Present/Intact | Sample Seals: Present | TLI Project Number : 36062 | Book                       |
| Chain of Custody : Present    |                       | Client: RFW01              | Roy F. Weston, Inc.        |
| Sample Tags : Present         |                       | Date Received : 02/06/96   | By <i>[Signature]</i> Page |
| Sample Tag Numbers: Listed    |                       |                            |                            |
| SNO Forms : N/A               |                       |                            |                            |

|           |     |            |                    |        |     |
|-----------|-----|------------|--------------------|--------|-----|
| Ice Chest | ICE | Temp 4.0 C | Carrier and Number | FedEx/ | 217 |
|-----------|-----|------------|--------------------|--------|-----|

| TLI Number            | Matrix    | To LAB   | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE |
|-----------------------|-----------|----------|------------|-----------|------------|-----------|------------|-----------|------------|
| MR/H:CPM              | Client ID | Location | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  |
| 113-217-1A            | FILTER    | 2/07/96  | EMPTY      |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       | SKM      |            |           |            |           |            |           |            |
| 113-217-1B            | XAD       |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-1C            | FH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-1D            | BH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-1E            | TOLUENE   |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2A            | FILTER    |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2B            | XAD       |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2C            | FH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2D            | BH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2E            | TOLUENE   |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |

Receiving Remarks:

Archive Remarks:

---TRIANGLE LABORATORIES, INC.--CHAIN OF CUSTODY--REVISED 02/17/95---

13

12

|                               |                       |                            |                                   |
|-------------------------------|-----------------------|----------------------------|-----------------------------------|
| Custody Seal : Present/Intact | Sample Seals: Present | TLI Project Number : 36062 | Book : 113                        |
| Chain of Custody : Present    |                       | Client: RFW01              | Roy F. Weston, Inc.               |
| Sample Tags : Present         |                       | Date Received : 02/06/96   | By: <i>[Signature]</i> Page : 217 |
| Sample Tag Numbers: Listed    |                       |                            |                                   |
| SMD Forms : N/A               |                       |                            |                                   |

|           |     |            |                    |        |     |
|-----------|-----|------------|--------------------|--------|-----|
| Ice Chest | ICE | Temp 4.0 C | Carrier and Number | FedEx/ | 217 |
|-----------|-----|------------|--------------------|--------|-----|

| TLI Number            | Matrix Location | To LAB Date/Init | To STORAGE Date/Init | To LAB Date/Init | To STORAGE Date/Init | To LAB Date/Init | To STORAGE Date/Init | To LAB Date/Init | To STORAGE Date/Init |
|-----------------------|-----------------|------------------|----------------------|------------------|----------------------|------------------|----------------------|------------------|----------------------|
| 113-217-3A            | FILTER          | 2/07/96          | EMPTY                |                  |                      |                  |                      |                  |                      |
| COE-HG-AFTOUT-M23-BT- | CO1             | 36m              |                      |                  |                      |                  |                      |                  |                      |
| 113-217-3B            | XAD             |                  |                      |                  |                      |                  |                      |                  |                      |
| COE-HG-AFTOUT-M23-BT- | CO1             |                  |                      |                  |                      |                  |                      |                  |                      |
| 113-217-3C            | FH/RINSE        |                  |                      |                  |                      |                  |                      |                  |                      |
| COE-HG-AFTOUT-M23-BT- | CO1             |                  |                      |                  |                      |                  |                      |                  |                      |
| 113-217-3D            | BH/RINSE        |                  |                      |                  |                      |                  |                      |                  |                      |
| COE-HG-AFTOUT-M23-BT- | CO1             |                  |                      |                  |                      |                  |                      |                  |                      |
| 113-217-3E            | TOLUENE         |                  |                      |                  |                      |                  |                      |                  |                      |
| COE-HG-AFTOUT-M23-BT- | CO1             |                  |                      |                  |                      |                  |                      |                  |                      |

Receiving Remarks:

Archive Remarks:

36062

② fix-spiked XAD clean

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96 TLI BLANK  
SPIKE .0ng USF-C & USF-S  
SPIKER OME  
PREPARER G.L.  
WESTON

① XAD-clean, 11 Filter-cream 19/ASS wool-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R1-XAD  
Project: 36049  
113-204-1B

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R1-FILT  
Project: 36049  
113-204-1A

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE .0ng USF-C & USF-S  
SPIKER OME  
PREPARER G.L.  
WESTON

Client

Plant

Source

Sample No.

Sample Method

Sample Type

COE - HOT GAS

ALPINE, AL

AFTERBURNER OUTLET

Date

METHOD 2 PCDF

② XAD-clean, 11 Filter-cream 19/ASS wool-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R2-  
Project: 36062  
113-217-1B

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R2-  
Project: 36062  
113-217-1A

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE .0ng USF-C & USF-S  
SPIKER OME  
PREPARER G.L.  
WESTON

15

15  
1.2.2.2

36062

③ XAO-clean, IF Hef-clean, glasswool-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R3-  
Project: 36062  
113-217-2B

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R5-  
Project: 36062  
113-217-2A

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE .Ong USF-C & USF-S  
SPIKER *CMR*  
PREPARER G.L.  
WESTON

④ XAO-clean, IF Hef-clean, glasswool-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-BT-  
Project: 36062  
113-217-3B

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-BT-  
Project: 36062  
113-217-3A

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE .Ong USF-C & USF-S  
SPIKER *CMR*  
PREPARER G.L.  
WESTON

⑤ IF Hef-clean, XAO-clean, glasswool-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-OUT-M23-SB-XAD  
Project: 36049  
113-204-2B

RFW01-Roy F. Weston, Inc.  
COE-HG-OUT-M23-SB-FILT  
Project: 36049  
113-204-2A

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE .Ong USF-C & USF-S  
SPIKER *CMR*  
PREPARER G.L.  
WESTON

IF Hef  
IF Hef  
IF Hef  
IF Hef

Date: 02/10/96  
Time: 18:31

TRIANGLE LABORATORIES, INC.  
Wet Lab M45/PUF Observations  
Project: 36062

PRDPERC v3.17  
Page: 1

| Sample # | TLI Number.. | Customer.Sample.Id..... | F. No | XAD Color..... | Filter Color..... | Glass Wool PUF Color..... | Odor..... | Q.No. | Entered.By..... | Date.... | Time..... | Air |
|----------|--------------|-------------------------|-------|----------------|-------------------|---------------------------|-----------|-------|-----------------|----------|-----------|-----|
| 000      | TLI Blank    | TLI M23 Blank           | 0     | clean          |                   |                           |           | 02518 | mercier         | 02/08    | 01:19 F   |     |
| 001      | 113-204-1A-E | COE-HG-AFTOUT-M23-R1    | 1     | clean          | cream             | clean                     |           | 02518 | mercier         | 02/08    | 01:19 F   |     |
| 002      | 113-217-1A-E | COE-HG-AFTOUT-M23-R2    | 1     | clean          | cream             | clean                     |           | 02518 | mercier         | 02/08    | 01:19 F   |     |
| 003      | 113-217-2A-E | COE-HG-AFTOUT-M23-R3    | 1     | clean          | cream             | clean                     |           | 02518 | mercier         | 02/08    | 01:19 F   |     |
| 004      | 113-217-3A-E | COE-HG-AFTOUT-M23-BT    | 1     | clean          | clean             | clean                     |           | 02518 | mercier         | 02/08    | 01:19 F   |     |
| 005      | 113-204-2A-D | COE-HG-OUT-M23-SB       | 1     | clean          | clean             | clean                     |           | 02518 | mercier         | 02/08    | 01:19 F   |     |

\*\*\* End of Report \*\*\*

PCDD/PCDF/PBDD/PBDF Sample Preparation Tracking & Management Form

Client: Roy F. Weston, Inc. (RFW01)

Project: 36062

Sample Information:

Extraction Date: 2/07/96

Spiking Dates: 2/07/96 2/8/96 1/1 1/1 1/1

WL Spike: 40 µl, conc: 0.100 ng/µl

Method: Method 23: T-O, Toluene Combined

| S#.ord | TLI<br>SAMPLE<br>ID | CLIENT<br>SAMPLE ID  | GROSS<br>WEIGHT |       | SAMPLE<br>SIZE<br>g / ml | USF - I            | USF - A            | MISC              | USFMX             | Sample<br>Left ?<br>Yes/No |
|--------|---------------------|----------------------|-----------------|-------|--------------------------|--------------------|--------------------|-------------------|-------------------|----------------------------|
|        |                     |                      | Before          | After |                          | Ex/Cl<br>Initials  | Ex/Cl<br>Initials  | Ex/Cl<br>Initials | Extr.<br>Initials |                            |
| 000    | TLI Blank           | TLI M23 Blank        |                 |       |                          | <i>[Signature]</i> | <i>[Signature]</i> |                   |                   | $\frac{1}{2}$              |
| 001    | 113-204-1A-E        | COE-HG-AFTOUT-M23-R1 |                 |       |                          | <i>[Signature]</i> | <i>[Signature]</i> |                   |                   | $\frac{1}{2}$              |
| 002    | 113-217-1A-E        | COE-HG-AFTOUT-M23-R2 |                 |       |                          | <i>[Signature]</i> | <i>[Signature]</i> |                   |                   | $\frac{1}{2}$              |
| 003    | 113-217-2A-E        | COE-HG-AFTOUT-M23-R3 |                 |       |                          | <i>[Signature]</i> | <i>[Signature]</i> |                   |                   | $\frac{1}{2}$              |
| 004    | 113-217-3A-E        | COE-HG-AFTOUT-M23-BT |                 |       |                          | <i>[Signature]</i> | <i>[Signature]</i> |                   |                   | $\frac{1}{2}$              |
| 005    | 113-204-2A-D        | COE-HG-OUT-M23-SB    |                 |       |                          | <i>[Signature]</i> | <i>[Signature]</i> |                   |                   | $\frac{1}{2}$              |

Gross weight of sample container + sample before/after aliquot removal

605 Extract and HOLD

COMMENTS:

Indicate below the TLI Identification Number of the Sample Fortification Solutions:

USF-AIS: \_\_\_\_\_

USF-I: 33456 0.1 µg/ml 5/11/20/96 USF-A: 3496 0.1 µg/ml 5/11/20/96

USF-ACS: \_\_\_\_\_

USF-MX: \_\_\_\_\_

USF-C: \_\_\_\_\_

Other: \_\_\_\_\_

Initial/Date 5/11/20/96 2/07/96

LOT # (Solvents): Toluene 950743

INITIALS OF BOTH THE SPIKER AND OBSERVER MUST BE ENTERED.

(XXXXX = Gross Weight not provided for WATER Samples.)

for extraction: \_\_\_\_\_

18  
13  
2.20.96

TRIANGLE LABORATORIES, INC.  
 SAMPLE EXTRACTION and CLEANUP TRACKING FORM  
 TLI Project: 36062

| EXTRACTION                      |                            |                |                           | CHROMATOGRAPHIC CLEANUP |             |                        |                        |               |                  |               |                       |
|---------------------------------|----------------------------|----------------|---------------------------|-------------------------|-------------|------------------------|------------------------|---------------|------------------|---------------|-----------------------|
| Ext S#.crd<br>and<br>TLI Number | Spike<br>before<br>Extr. ✓ | Extr. ✓        | Spike<br>after<br>Extr. ✓ | Acid<br>Base            | Big<br>Fish | Escld<br>Silica<br>Gel | Acid<br>Almina<br>6 gm | Flor-<br>isil | Carbon<br>Column | Trans-<br>fer | Add'l<br>Clean-<br>up |
| 000<br>TLI Blank                | SDP<br>2/10/96             | SDM<br>2/10/96 | SDP<br>2/10/96            |                         |             |                        |                        |               |                  | 2/10/96       |                       |
| 001<br>113-204-1A-E             |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
| 002<br>113-217-1A-E             |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
| 003<br>113-217-2A-E             |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
| 004<br>113-217-3A-E             |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
| 005<br>113-204-2A-D             | ↓                          | ↓              | ↓                         |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |                | 2-8-96                    |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |                |                           |                         |             |                        |                        |               |                  |               |                       |

|                  |                     |              |             |              |
|------------------|---------------------|--------------|-------------|--------------|
| ...PROCEDURE.... | .....DETAILS.....   | Performed By | Observed By | ....DATE.... |
| Spike            |                     | SDM          | SDP         | 2/07/96      |
| Soxhelet Ext.    |                     | SDM          |             | 2/07/96      |
| Rotovap          | 40mL, 10mL, Dryness | SDP          |             | 2/8/96       |
| Combine          |                     | N/A          |             | 2/8/96       |
| Divide           | 50:50               | SDP          |             | 2/8/96       |
| Solvent Exchange |                     |              |             | 2/8/96       |
| Add Tridecane    |                     |              |             | 2/8/96       |

Comments

Tridecane needs to be added up for  
 extraction

Tridecane was added 100

Rev 01/25/96 (PSTMF 4)

13

13

1.10.96



TL-RTP Project Number: 36062A

Water Bath Temperature: "

Total Hours:

Comments:

\* Blank - clean Toluene only

TRIANGLE LABORATORIES, INC.  
Transfer Chain-of-Custody Form  
Project 36062-A

Transfer From: OWLS5 To: OMSSV

|              | Initials.. | Date.....      | Time...        |
|--------------|------------|----------------|----------------|
| Released by: | <u>MK</u>  | <u>3/07/96</u> | <u>1:00</u> PM |
| Accepted by: | <u>W</u>   | <u>3/7/96</u>  | <u>13:00</u>   |

| MILES.ID..... | TLI_No.....  | Cust.Id.....         |
|---------------|--------------|----------------------|
| 36062-A -000  | TLI Blank    | TLI M23 Blank        |
| 36062-A -001  | 113-204-1A-E | COE-HG-AFTOUT-M23-R1 |
| 36062-A -002  | 113-217-1A-E | COE-HG-AFTOUT-M23-R2 |
| 36062-A -003  | 113-217-3A-E | COE-HG-AFTOUT-M23-BT |

-----XfrCOC (Rev 11/01/94)-----  
Additional comments or instructions:

TL-RTP Project #: 3L20L2A

METHOD: (8270) 625 CLP

ICAL Name: ICAL V304

[illegible]

SOP No. CMS130

Revision 3.0

12 January 1994

page 9 of 10

# TRIANGLE LABORATORIES OF RTP, INC. RUN LOG

| S# | COLUMN TYPE | COLUMN # | ANALYSIS | ACQ METHOD | GC METHOD | FIND DB'S | OTHER |
|----|-------------|----------|----------|------------|-----------|-----------|-------|
| 1  | DBS-625     | 3315023  |          | colist.m   |           | 1.        |       |
| 2  |             |          |          |            |           | 2.        |       |

EXTRACT / SAMPLE VOLUME 100  $\mu$ L / mL

| DATE   | TIME  | PROJECT # | SAMPLE #   | CLIENT SAMPLE ID   | FILENAME | OPER | BACKUP<br>NET ARC | PROC | PH | COMMENTS                                                     |
|--------|-------|-----------|------------|--------------------|----------|------|-------------------|------|----|--------------------------------------------------------------|
| 3/4/90 | 14:22 | -         | 2867       | DEPP               | 14460    | 1460 |                   | 1460 |    | passed                                                       |
| 3/4/90 | 14:21 | -         | 3365       | SSD050             | 14461    | 00   |                   | 1460 |    | Failed pherol out                                            |
| 3/4/90 | 15:41 | -         | 3365       | SSD050             | 14462    | 1460 |                   | 1460 |    | changed line, cut off 2 inches of column - failed - Van ISAL |
| 3/4/90 | 16:29 | -         | 3368       | SSD160             | 14463    | 1460 |                   | 1460 |    |                                                              |
| 3/4/90 | 17:13 | -         | 3363       | SSD100             | 14464    | 1460 |                   | 1460 |    |                                                              |
| 3/4/90 | 17:51 | -         | 3364       | SSD080             | 14465    | 1460 |                   | 00   |    |                                                              |
| 3/4/90 | 18:42 | -         | 3366       | SSD080             | 14466    | 1460 |                   | 00   |    |                                                              |
| 3/4/90 | 19:26 | 36400     | -          | SBK030196          | 14467    | 1460 |                   | 00   |    |                                                              |
| 3/4/90 | 20:09 | 36400     | 115-55-1A  | 0228-CVI           | 14468    | 1460 |                   | 00   |    |                                                              |
| 3/4/90 | 20:53 | 36205     | 114-199-41 | Outlet Smoke Run-1 | 14469    | 1460 |                   | 00   |    | Targets over calib. range<br>deleted box                     |

INTERNAL STANDARD SURROGATE STANDARD ANALYTE STANDARD

|                   |  |  |
|-------------------|--|--|
| 3397C exp 6/13/90 |  |  |
| 54628 BY 5/1/91   |  |  |
| 33                |  |  |

# TRIANGLE LABORATORIES OF RTP, INC. RUN LOG

| MS# | COLUMN TYPE | COLUMN # | ANALYSIS | ACQ METHOD | GC METHOD | FIND DB'S | OTHER |
|-----|-------------|----------|----------|------------|-----------|-----------|-------|
| ✓   | DB5-625     | 7515023  | ✓        | colt.m     | ✓         | 1.        |       |
|     |             |          |          |            |           | 2.        |       |

EXTRACT / SAMPLE VOLUME 100 (ul) mL

| DATE   | TIME | PROJECT # | SAMPLE #    | CLIENT SAMPLE ID                   | FILENAME | OPER | BACKUP |     | PROC | pH | COMMENTS                                                          |
|--------|------|-----------|-------------|------------------------------------|----------|------|--------|-----|------|----|-------------------------------------------------------------------|
|        |      |           |             |                                    |          |      | NET    | ARC |      |    |                                                                   |
| 3/1/96 | 0808 | -         | 2867        | RTAP                               | YLS15    | ✓    |        |     | ✓    |    | cut off 3 ft column<br>passed                                     |
| 3/1/96 | 0834 | -         | 3365        | SST0050                            | YLS16    | ✓    |        |     | ✓    |    | failed - run off alcohol > 50% D                                  |
| 3/1/96 | 0958 | -         | 3365        | SST0050                            | YLS17    | ✓    |        |     | ✓    |    | cut off 1 1/2 ft column                                           |
| 3/1/96 | 1103 | -         | 3365        | SST0050                            | YLS18    | ✓    |        |     | ✓    |    | failed - run off alcohol > 50% D<br>cut off 2 ft column<br>passed |
| 3/1/96 | 1203 | 30062A    | -           | SAUK 020896                        | YLS19    | ✓    |        |     | ✓    |    | 15.5-4 high                                                       |
| 3/1/96 | 1236 | 30317F    | -           | SAUK 030496                        | YLS20    | ✓    |        |     | ✓    |    |                                                                   |
| 3/1/96 | 1324 | 30319F    | -           | SAUK 030396                        | YLS21    | ✓    |        |     | ✓    |    |                                                                   |
| 3/1/96 | 1411 | 30370B    | -           | SAUK 030196                        | YLS22    | ✓    |        |     | ✓    |    | Q-n-butyl phthalate @ 172mg<br>benzoic acid @ 113mg.              |
|        |      | 30370B    | 11321.3A F  | 3 96-27-MMS-BLANK<br>TRANS<br>46-2 | YLS23    | ✓    |        |     |      |    | 3/8/96                                                            |
|        |      | 30062A    | 113204.1A-6 | 106-HG-APP1001-M25-21              | YLS24    | ✓    |        |     |      |    | 3/8/96                                                            |

INTERNAL STANDARD SURROGATE STANDARD ANALYTE STANDARD

|     |    |                                     |  |  |
|-----|----|-------------------------------------|--|--|
| AGE | 39 | 3097D EXP 6/12/96<br>SPL @ 824 WJLW |  |  |
|-----|----|-------------------------------------|--|--|

# TRIANGLE LABORATORIES OF RTP, INC. RUN LOG

| IS# | COLUMN TYPE | COLUMN # | ANALYSIS | ACQ METHOD | GC METHOD | FIND DB'S | OTHER |
|-----|-------------|----------|----------|------------|-----------|-----------|-------|
| 1   | DB5625      | 3515023  |          | colist.m   |           | 1.        |       |
|     |             |          |          |            |           | 2.        |       |

EXTRACT / SAMPLE VOLUME 100(ul)/mL

| DATE   | TIME | PROJECT # | SAMPLE #                    | CLIENT SAMPLE ID                    | FILENAME  | OPER | BACKUP<br>NET ARC | PROC | pH | COMMENTS                           |
|--------|------|-----------|-----------------------------|-------------------------------------|-----------|------|-------------------|------|----|------------------------------------|
| 3/1/94 | 1454 | 36062A    | -                           | SPARK 020896                        | 36 020896 | ND   |                   | ND   |    | is 5.6 high                        |
| 3/1/94 | 1531 | 36330B    | 115.31.3A-F                 | 96-21=MMS-PANIL TRAIN               | YL524     | ND   |                   | ND   |    |                                    |
| 3/1/94 | 1621 | 36062A    | 113.204.1A-E                | 006-H6-AFTOUT-M23-14                | YL525     | ND   |                   | ND   |    |                                    |
| 3/1/94 | 1705 | 36062A    | 113.217.1A-E<br>#3-204.1A-E | 44 00 31296<br>COE-H6-AFTOUT-M23-12 | YL526     | ND   |                   | ND   |    |                                    |
| 3/1/94 | 1747 | 36062A    | 113.217.3A-E<br>36 00 31490 | COE-H6-AFTOUT-M23-15                | YL527     | ND   |                   | ND   |    | (Diluted 5x) (BUTYRACETONE)        |
| 3/1/94 | 1831 | 36330B    | 114.222.2A-B                | DS-02                               | YL528     | ND   |                   | ND   |    | final DF=10X phenol above cal. var |
| 3/1/94 | 1918 | 36330B    | 115.311A-F                  | 96-21=MMS-PANIL #1                  | YL529     | ND   |                   | ND   |    | Diluted 5X                         |
| 3/1/94 | 1959 | 36330B    | 115.31.2A-F                 | 96-21=MMS-PANIL #2                  | YL530     | ND   |                   | ND   |    | Diluted 5X                         |
| 3/1/94 | 2042 | 36330B    | 114.224.1                   | 30% A-NY-1                          | YL531     | ND   |                   | ND   |    | Diluted 10X                        |
| 3/1/94 | 2124 | 36330B    | 114.224.2                   | 30% B-NY-2                          | YL532     | ND   |                   | ND   |    | Diluted 10X                        |

INTERNAL STANDARD SURROGATE STANDARD ANALYTE STANDARD

3317 D Exp 6/13/94  
5ml @ 834 mg/ml

**ROY F. WESTON**

Project Number: 36062A

Sample File: YL525

Method 8270A M23

Sample ID: COE-HG-AFTOUT-M23-R1

Client Project: COE HOT GAS PRG

Date Received: 02/02/96

Response File: YL518

TLI ID: 113-204-1A-E

Date Extracted: 02/07/96

Date Analyzed : 03/08/96

Dilution Factor: 2.00

| Analyte                            | Amount<br>ug | FLAG | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|------------------------------------|--------------|------|-------|------------------|-------------------|
| 1,4-Dichlorobenzene-d <sub>4</sub> |              | IS 1 | 9.09  |                  |                   |
| Phenol                             | 4.36         | J    | 8.46  |                  | 20                |
| bis(2-Chloroethyl)ether            |              | U    |       | 4.00             | 20                |
| 2-Chlorophenol                     |              | U    |       | 2.40             | 20                |
| 1,3-Dichlorobenzene                |              | U    |       | 2.04             | 20                |
| 1,4-Dichlorobenzene                |              | U    |       | 1.95             | 20                |
| 1,2-Dichlorobenzene                |              | U    |       | 2.09             | 20                |
| 2,2'-oxybis(1-Chloropropane)       |              | U    |       | 4.11             | 20                |
| Benzyl alcohol                     | 378.52       | E    | 9.37  |                  | 20                |
| 2-Methylphenol                     |              | U    |       | 3.82             | 20                |
| 3/4-Methylphenol                   |              | U    |       | 3.76             | 20                |
| N-Nitroso-di-n-propylamine         |              | U    |       | 5.05             | 20                |
| Hexachloroethane                   |              | U    |       | 4.09             | 20                |
| Naphthalene-d <sub>8</sub>         |              | IS 2 | 11.56 |                  |                   |
| Nitrobenzene                       |              | U    |       | 2.53             | 20                |
| Isophorone                         |              | U    |       | 1.42             | 20                |
| 2-Nitrophenol                      |              | U    |       | 3.70             | 20                |
| 2,4-Dimethylphenol                 |              | U    |       | 3.12             | 20                |
| bis(2-Chloroethoxy)methane         |              | U    |       | 3.16             | 20                |
| Benzoic acid                       | 50.02        |      | 11.07 |                  | 50                |
| 2,4-Dichlorophenol                 |              | U    |       | 2.66             | 20                |
| 1,2,4-Trichlorobenzene             |              | U    |       | 2.16             | 20                |
| Naphthalene                        | 1.34         | J    | 11.61 |                  | 20                |
| 4-Chloroaniline                    |              | U    |       | 2.05             | 20                |
| Hexachlorobutadiene                |              | U    |       | 2.60             | 20                |
| 4-Chloro-3-methylphenol            |              | U    |       | 3.25             | 20                |

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

Triangle Laboratories of RTP, Inc.

801 Capitola Drive • Durham, North Carolina 27713

Phone: (919) 544-5729 • Fax: (919) 544-5491

Savar v3.5

Printed: 17:25 03/20/1996

ROY E. WESTON

Project Number: 36062A  
Sample File: YL525

Method 8270A M23  
Sample ID: COE-HG-AFTOUT-M23-R1

Client Project: COE HOT GAS PRG      Date Received: 02/02/96      Response File: YL518  
TLI ID: 113-204-1A-E      Date Extracted: 02/07/96  
Date Analyzed : 03/08/96

Dilution Factor: 2.00

| Analyte                      | Amount<br>ug | FLAG | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|------------------------------|--------------|------|-------|------------------|-------------------|
| 2-Methylnaphthalene          |              | U    |       | 1.26             | 20                |
| Acenaphthene-d <sub>10</sub> |              | IS 3 | 15.16 |                  |                   |
| Hexachlorocyclopentadiene    |              | U    |       | 2.34             | 20                |
| 2,4,6-Trichlorophenol        |              | U    |       | 2.92             | 20                |
| 2,4,5-Trichlorophenol        |              | U    |       | 2.82             | 20                |
| 2-Chloronaphthalene          |              | U    |       | 1.17             | 20                |
| 2-Nitroaniline               |              | U    |       | 4.32             | 50                |
| Dimethylphthalate            |              | U    |       | 0.96             | 20                |
| 2,6-Dinitrotoluene           |              | U    |       | 4.13             | 20                |
| 2,4-Dinitrotoluene           |              | U    |       | 2.69             | 20                |
| Acenaphthylene               |              | U    |       | 0.75             | 20                |
| 3-Nitroaniline               |              | U    |       | 3.76             | 50                |
| Acenaphthene                 |              | U    |       | 1.34             | 20                |
| 2,4-Dinitrophenol            |              | U    |       | 8.53             | 50                |
| 4-Nitrophenol                |              | U    |       | 4.05             | 50                |
| Dibenzofuran                 |              | U    |       | 0.78             | 20                |
| Diethylphthalate             | 7.80         | J    | 16.12 |                  | 20                |
| 4-Chlorophenyl-phenylether   |              | U    |       | 1.86             | 20                |
| Fluorene                     |              | U    |       | 1.02             | 20                |
| 4-Nitroaniline               |              | U    |       | 3.68             | 50                |
| Phenanthrene-d <sub>10</sub> |              | IS 4 | 18.21 |                  |                   |
| 4,6-Dinitro-2-methylphenol   |              | U    |       | 4.65             | 50                |
| N-Nitrosodiphenylamine       |              | U    |       | 1.50             | 20                |
| 4-Bromophenyl-phenylether    |              | U    |       | 2.15             | 20                |
| Hexachlorobenzene            |              | U    |       | 1.54             | 20                |
| Pentachlorophenol            |              | U    |       | 2.69             | 50                |

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

Triangle Laboratories of RTP, Inc.  
801 Capitola Drive • Durham, North Carolina 27713  
Phone: (919) 544-5729 • Fax: (919) 544-5491

Savar v3.5  
Printed: 17:25 03/20/1996



**ROY F. WESTON**

Project Number: 36062A  
Sample File: YL525

Method 8270A M23  
Sample ID: COE-HG-AFTOUT-M23-R1

|                                 |                          |                      |
|---------------------------------|--------------------------|----------------------|
| Client Project: COE HOT GAS PRG | Date Received: 02/02/96  | Response File: YL518 |
| TLI ID: 113-204-1A-E            | Date Extracted: 02/07/96 |                      |
|                                 | Date Analyzed: 03/08/96  |                      |

Dilution Factor: 2.00

| Analyte                    | Amount<br>ug | FLAG      | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|----------------------------|--------------|-----------|-------|------------------|-------------------|
| Phenanthrene               |              | U         |       | 0.59             | 20                |
| Anthracene                 | 0.35         | J         | 18.26 |                  | 20                |
| Di-n-butylphthalate        | 21.48        |           | 19.53 |                  | 20                |
| Fluoranthene               |              | U         |       | 0.45             | 20                |
| Chrysene-d <sub>12</sub>   |              | IS 5      | 23.67 |                  |                   |
| Pyrene                     |              | U         |       | 0.33             | 20                |
| Butylbenzylphthalate       | 0.39         | J         | 22.62 |                  | 20                |
| 3,3'-Dichlorobenzidine     |              | U         |       | 0.94             | 20                |
| bis(2-Ethylhexyl)phthalate | 16.27        | J         | 23.83 |                  | 20                |
| Benzo(a)anthracene         |              | U         |       | 0.35             | 20                |
| Chrysene                   |              | U         |       | 0.38             | 20                |
| Perylene-d <sub>12</sub>   |              | IS 6 High | 27.30 |                  |                   |
| Di-n-octylphthalate        |              | U         |       | 0.25             | 20                |
| Benzo(b)fluoranthene       |              | U         |       | 0.34             | 20                |
| Benzo(k)fluoranthene       |              | U         |       | 0.35             | 20                |
| Benzo(a)pyrene             |              | U         |       | 0.35             | 20                |
| Indeno(1,2,3-cd)pyrene     |              | U         |       | 0.36             | 20                |
| Dibenz(a,h)anthracene      |              | U         |       | 0.48             | 20                |
| Benzo(g,h,i)perylene       |              | U         |       | 0.42             | 20                |

Reviewed by           *MJ*           Date 03/20/96

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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**ROY F. WESTON**

Project Number: 36062A

Method 8270A

Sample File: YL525

Sample ID COE-HG-AFTOUT-M23-R1

Client Project: COE HOT GAS PRG

Date Received: 02/02/96

TLI ID: 113-204-1A-E

Date Extracted: 02/07/96

Date Analyzed: 03/08/96

Dilution Factor: 2

**Tentatively Identified Compounds**

| Name                     | RT     | Area     | IS RT  | IS Area | Amount, ug |
|--------------------------|--------|----------|--------|---------|------------|
| Benzaldehyde             | 8.301  | 25244264 | 9.095  | 1851062 | 1091       |
| Substituted Benzaldehyde | 11.244 | 332237   | 11.563 | 2174095 | 12         |
| Substituted Alkane       | 12.895 | 1491038  | 11.563 | 2174095 | 55         |
| Triacetin                | 13.292 | 2811989  | 11.563 | 2174095 | 103        |
| Aromatic Ketone          | 13.420 | 393112   | 15.156 | 2711062 | 12         |
| Bibenzyl                 | 15.553 | 1853983  | 15.156 | 2711062 | 55         |
| Benzophenone             | 16.672 | 302264   | 15.156 | 2711062 | 9          |
| Substituted Amide        | 25.851 | 1409359  | 27.295 | 5248717 | 21         |

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**ROY F. WESTON**

Project Number: 36062A  
Sample File: YL526

Method 8270A M23  
Sample ID: COE-HG-AFTOUT-M23-R2

|                                 |                          |                      |
|---------------------------------|--------------------------|----------------------|
| Client Project: COE HOT GAS PRG | Date Received: 02/06/96  | Response File: YL518 |
| TLI ID: 113-217-1A-E            | Date Extracted: 02/07/96 |                      |
|                                 | Date Analyzed: 03/08/96  |                      |

Dilution Factor: 2.00

| Analyte                            | Amount<br>ug | FLAG | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|------------------------------------|--------------|------|-------|------------------|-------------------|
| 1,4-Dichlorobenzene-d <sub>4</sub> |              | IS 1 | 9.10  |                  |                   |
| Phenol                             | 8.01         | J    | 8.46  |                  | 20                |
| bis(2-Chloroethyl)ether            |              | U    |       | 3.81             | 20                |
| 2-Chlorophenol                     |              | U    |       | 2.29             | 20                |
| 1,3-Dichlorobenzene                |              | U    |       | 1.94             | 20                |
| 1,4-Dichlorobenzene                |              | U    |       | 1.86             | 20                |
| 1,2-Dichlorobenzene                |              | U    |       | 1.99             | 20                |
| 2,2'-oxybis(1-Chloropropane)       |              | U    |       | 3.92             | 20                |
| Benzyl alcohol                     | 1521.61      | E    | 9.39  |                  | 20                |
| 2-Methylphenol                     |              | U    |       | 3.64             | 20                |
| 3/4-Methylphenol                   |              | U    |       | 3.59             | 20                |
| N-Nitroso-di-n-propylamine         |              | U    |       | 4.82             | 20                |
| Hexachloroethane                   |              | U    |       | 3.89             | 20                |
| Naphthalene-d <sub>8</sub>         |              | IS 2 | 11.57 |                  |                   |
| Nitrobenzene                       |              | U    |       | 2.52             | 20                |
| Isophorone                         |              | U    |       | 1.42             | 20                |
| 2-Nitrophenol                      |              | U    |       | 3.68             | 20                |
| 2,4-Dimethylphenol                 |              | U    |       | 3.10             | 20                |
| bis(2-Chloroethoxy)methane         |              | U    |       | 3.14             | 20                |
| Benzoic acid                       | 66.93        |      | 11.09 |                  | 50                |
| 2,4-Dichlorophenol                 |              | U    |       | 2.64             | 20                |
| 1,2,4-Trichlorobenzene             |              | U    |       | 2.15             | 20                |
| Naphthalene                        | 1.63         | J    | 11.61 |                  | 20                |
| 4-Chloroaniline                    |              | U    |       | 2.04             | 20                |
| Hexachlorobutadiene                |              | U    |       | 2.59             | 20                |
| 4-Chloro-3-methylphenol            |              | U    |       | 3.23             | 20                |

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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**ROY F. WESTON**

Project Number: 36062A

Method 8270A M23

Sample File: YL526

Sample ID: COE-HG-AFTOUT-M23-R2

Client Project: COE HOT GAS PRG

Date Received: 02/06/96

Response File: YL518

TLI ID: 113-217-1A-E

Date Extracted: 02/07/96

Date Analyzed : 03/08/96

Dilution Factor: 2.00

| Analyte                      | Amount<br>ug | FLAG | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|------------------------------|--------------|------|-------|------------------|-------------------|
| 2-Methylnaphthalene          |              | U    |       | 1.25             | 20                |
| Acenaphthene-d <sub>10</sub> |              | IS 3 | 15.15 |                  |                   |
| Hexachlorocyclopentadiene    |              | U    |       | 2.30             | 20                |
| 2,4,6-Trichlorophenol        |              | U    |       | 2.87             | 20                |
| 2,4,5-Trichlorophenol        |              | U    |       | 2.78             | 20                |
| 2-Chloronaphthalene          |              | U    |       | 1.15             | 20                |
| 2-Nitroaniline               |              | U    |       | 4.25             | 50                |
| Dimethylphthalate            |              | U    |       | 0.95             | 20                |
| 2,6-Dinitrotoluene           |              | U    |       | 4.07             | 20                |
| 2,4-Dinitrotoluene           |              | U    |       | 2.65             | 20                |
| Acenaphthylene               |              | U    |       | 0.74             | 20                |
| 3-Nitroaniline               |              | U    |       | 3.69             | 50                |
| Acenaphthene                 |              | U    |       | 1.32             | 20                |
| 2,4-Dinitrophenol            |              | U    |       | 8.39             | 50                |
| 4-Nitrophenol                |              | U    |       | 3.99             | 50                |
| Dibenzofuran                 |              | U    |       | 0.77             | 20                |
| Diethylphthalate             | 3.61         | J    | 16.13 |                  | 20                |
| 4-Chlorophenyl-phenylether   |              | U    |       | 1.83             | 20                |
| Fluorene                     |              | U    |       | 1.00             | 20                |
| 4-Nitroaniline               |              | U    |       | 3.62             | 50                |
| Phenanthrene-d <sub>10</sub> |              | IS 4 | 18.21 |                  |                   |
| 4,6-Dinitro-2-methylphenol   |              | U    |       | 4.44             | 50                |
| N-Nitrosodiphenylamine       |              | U    |       | 1.43             | 20                |
| 4-Bromophenyl-phenylether    |              | U    |       | 2.06             | 20                |
| Hexachlorobenzene            |              | U    |       | 1.47             | 20                |
| Pentachlorophenol            |              | U    |       | 2.57             | 50                |

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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**ROY F. WESTON**

Project Number: 36062A  
Sample File: YL526

Method 8270A M23  
Sample ID: COE-HG-AFTOUT-M23-R2

|                                 |                          |                      |
|---------------------------------|--------------------------|----------------------|
| Client Project: COE HOT GAS PRG | Date Received: 02/06/96  | Response File: YL518 |
| TLI ID: 113-217-1A-E            | Date Extracted: 02/07/96 |                      |
|                                 | Date Analyzed: 03/08/96  |                      |

Dilution Factor: 2.00

| Analyte                    | Amount<br>ug | FLAG      | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|----------------------------|--------------|-----------|-------|------------------|-------------------|
| Phenanthrene               |              | U         |       | 0.56             | 20                |
| Anthracene                 |              | U         |       | 0.57             | 20                |
| Di-n-butylphthalate        | 15.26        | J         | 19.53 |                  | 20                |
| Fluoranthene               |              | U         |       | 0.43             | 20                |
| Chrysene-d <sub>12</sub>   |              | IS 5 High | 23.67 |                  |                   |
| Pyrene                     |              | U         |       | 0.30             | 20                |
| Butylbenzylphthalate       |              | U         |       | 0.53             | 20                |
| 3,3'-Dichlorobenzidine     |              | U         |       | 0.85             | 20                |
| bis(2-Ethylhexyl)phthalate | 18.01        | J         | 23.83 |                  | 20                |
| Benzo(a)anthracene         |              | U         |       | 0.32             | 20                |
| Chrysene                   |              | U         |       | 0.34             | 20                |
| Perylene-d <sub>12</sub>   |              | IS 6 High | 27.29 |                  |                   |
| Di-n-octylphthalate        |              | U         |       | 0.28             | 20                |
| Benzo(b)fluoranthene       |              | U         |       | 0.39             | 20                |
| Benzo(k)fluoranthene       |              | U         |       | 0.40             | 20                |
| Benzo(a)pyrene             |              | U         |       | 0.40             | 20                |
| Indeno(1,2,3-cd)pyrene     |              | U         |       | 0.40             | 20                |
| Dibenz(a,h)anthracene      |              | U         |       | 0.53             | 20                |
| Benzo(g,h,i)perylene       |              | U         |       | 0.47             | 20                |

Reviewed by *m* Date 03/20/96

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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**ROY F. WESTON**

Project Number: 36062A

Method 8270A

Sample File: YL526

Sample ID COE-HG-AFTOUT-M23-R2

Client Project: COE HOT GAS PRG

Date Received: 02/06/96

TLI ID: 113-217-1A-E

Date Extracted: 02/07/96

Date Analyzed: 03/08/96

Dilution Factor: 2

**Tentatively Identified Compounds**

| Name                            | RT     | Area     | IS RT  | IS Area | Amount, ug |
|---------------------------------|--------|----------|--------|---------|------------|
| Benzaldehyde                    | 8.329  | 66249179 | 9.096  | 1927605 | 2749       |
| Alkylbenzene                    | 10.126 | 206466   | 9.096  | 1927605 | 9          |
| Substituted Benzene             | 11.014 | 11103797 | 11.567 | 2251279 | 395        |
| Substituted Benzaldehyde        | 11.248 | 494096   | 11.567 | 2251279 | 18         |
| Substituted Benzene             | 11.489 | 234228   | 11.567 | 2251279 | 8          |
| Alkyl Methyl Ester Benzoic Acid | 12.907 | 274833   | 11.567 | 2251279 | 10         |
| Aromatic Ketone                 | 13.417 | 549478   | 15.154 | 2779875 | 16         |
| Bibenzyl                        | 15.558 | 7177058  | 15.154 | 2779875 | 207        |
| Benzophenone                    | 16.664 | 639684   | 15.154 | 2779875 | 18         |
| Substituted Amide               | 25.847 | 1154626  | 27.287 | 4621595 | 20         |

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ROY F. WESTON

Project Number: 36062A  
Sample File: YL527

Method 8270A M23  
Sample ID: COE-HG-AFTOUT-M23-BT

Client Project: COE HOT GAS PRG  
TLI ID: 113-217-3A-E

Date Received: 02/06/96  
Date Extracted: 02/07/96  
Date Analyzed: 03/08/96

Response File: YL518

Dilution Factor: 2.00

| Analyte                            | Amount<br>ug | FLAG | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|------------------------------------|--------------|------|-------|------------------|-------------------|
| 1,4-Dichlorobenzene-d <sub>4</sub> |              | IS 1 | 9.10  |                  |                   |
| Phenol                             | 9.08         | J    | 8.46  |                  | 20                |
| bis(2-Chloroethyl)ether            |              | U    |       | 3.72             | 20                |
| 2-Chlorophenol                     |              | U    |       | 2.24             | 20                |
| 1,3-Dichlorobenzene                |              | U    |       | 1.90             | 20                |
| 1,4-Dichlorobenzene                |              | U    |       | 1.81             | 20                |
| 1,2-Dichlorobenzene                |              | U    |       | 1.95             | 20                |
| 2,2'-oxybis(1-Chloropropane)       |              | U    |       | 3.83             | 20                |
| Benzyl alcohol                     | 2515.21      | E    | 9.39  |                  | 20                |
| 2-Methylphenol                     |              | U    |       | 3.56             | 20                |
| 3/4-Methylphenol                   |              | U    |       | 3.50             | 20                |
| N-Nitroso-di-n-propylamine         |              | U    |       | 4.70             | 20                |
| Hexachloroethane                   |              | U    |       | 3.80             | 20                |
| Naphthalene-d <sub>8</sub>         |              | IS 2 | 11.57 |                  |                   |
| Nitrobenzene                       |              | U    |       | 2.63             | 20                |
| Isophorone                         |              | U    |       | 1.48             | 20                |
| 2-Nitrophenol                      |              | U    |       | 3.84             | 20                |
| 2,4-Dimethylphenol                 |              | U    |       | 3.24             | 20                |
| bis(2-Chloroethoxy)methane         |              | U    |       | 3.28             | 20                |
| Benzoic acid                       | 48.28        | J    | 11.05 |                  | 50                |
| 2,4-Dichlorophenol                 |              | U    |       | 2.76             | 20                |
| 1,2,4-Trichlorobenzene             |              | U    |       | 2.24             | 20                |
| Naphthalene                        | 1.64         | J    | 11.61 |                  | 20                |
| 4-Chloroaniline                    |              | U    |       | 2.13             | 20                |
| Hexachlorobutadiene                |              | U    |       | 2.70             | 20                |
| 4-Chloro-3-methylphenol            |              | U    |       | 3.38             | 20                |

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

**ROY F. WESTON**

**Project Number: 36062A**  
**Sample File: YL527**

**Method 8270A M23**  
**Sample ID: COE-HG-AFTOUT-M23-BT**

|                                        |                                 |                             |
|----------------------------------------|---------------------------------|-----------------------------|
| <b>Client Project: COE HOT GAS PRG</b> | <b>Date Received: 02/06/96</b>  | <b>Response File: YL518</b> |
| <b>TLI ID: 113-217-3A-E</b>            | <b>Date Extracted: 02/07/96</b> |                             |
|                                        | <b>Date Analyzed : 03/08/96</b> |                             |

**Dilution Factor: 2.00**

| Analyte                      | Amount<br>ug | FLAG | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|------------------------------|--------------|------|-------|------------------|-------------------|
| 2-Methylnaphthalene          |              | U    |       | 1.31             | 20                |
| Acenaphthene-d <sub>10</sub> |              | IS 3 | 15.15 |                  |                   |
| Hexachlorocyclopentadiene    |              | U    |       | 2.35             | 20                |
| 2,4,6-Trichlorophenol        |              | U    |       | 2.93             | 20                |
| 2,4,5-Trichlorophenol        |              | U    |       | 2.83             | 20                |
| 2-Chloronaphthalene          |              | U    |       | 1.17             | 20                |
| 2-Nitroaniline               |              | U    |       | 4.33             | 50                |
| Dimethylphthalate            |              | U    |       | 0.96             | 20                |
| 2,6-Dinitrotoluene           |              | U    |       | 4.14             | 20                |
| 2,4-Dinitrotoluene           |              | U    |       | 2.70             | 20                |
| Acenaphthylene               |              | U    |       | 0.75             | 20                |
| 3-Nitroaniline               |              | U    |       | 3.76             | 50                |
| Acenaphthene                 |              | U    |       | 1.34             | 20                |
| 2,4-Dinitrophenol            |              | U    |       | 8.55             | 50                |
| 4-Nitrophenol                |              | U    |       | 4.06             | 50                |
| Dibenzofuran                 |              | U    |       | 0.78             | 20                |
| Diethylphthalate             | 1.29         | J    | 16.12 |                  | 20                |
| 4-Chlorophenyl-phenylether   |              | U    |       | 1.86             | 20                |
| Fluorene                     |              | U    |       | 1.02             | 20                |
| 4-Nitroaniline               |              | U    |       | 3.68             | 50                |
| Phenanthrene-d <sub>10</sub> |              | IS 4 | 18.21 |                  |                   |
| 4,6-Dinitro-2-methylphenol   |              | U    |       | 4.56             | 50                |
| N-Nitrosodiphenylamine       |              | U    |       | 1.47             | 20                |
| 4-Bromophenyl-phenylether    |              | U    |       | 2.11             | 20                |
| Hexachlorobenzene            |              | U    |       | 1.51             | 20                |
| Pentachlorophenol            |              | U    |       | 2.64             | 50                |

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IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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ROY E. WESTON

Project Number: 36062A  
Sample File: YL527

Method 8270A M23  
Sample ID: COE-HG-AFTOUT-M23-BT

Client Project: COE HOT GAS PRG  
TLI ID: 113-217-3A-E

Date Received: 02/06/96  
Date Extracted: 02/07/96  
Date Analyzed: 03/08/96

Response File: YL518

Dilution Factor: 2.00

| Analyte                    | Amount<br>ug | FLAG      | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|----------------------------|--------------|-----------|-------|------------------|-------------------|
| Phenanthrene               |              | U         |       | 0.58             | 20                |
| Anthracene                 |              | U         |       | 0.58             | 20                |
| Di-n-butylphthalate        | 8.30         | J         | 19.53 |                  | 20                |
| Fluoranthene               |              | U         |       | 0.44             | 20                |
| Chrysene-d <sub>12</sub>   |              | IS 5 High | 23.67 |                  |                   |
| Pyrene                     |              | U         |       | 0.30             | 20                |
| Butylbenzylphthalate       |              | U         |       | 0.52             | 20                |
| 3,3'-Dichlorobenzidine     |              | U         |       | 0.84             | 20                |
| bis(2-Ethylhexyl)phthalate | 4.49         | J         | 23.83 |                  | 20                |
| Benzo(a)anthracene         |              | U         |       | 0.31             | 20                |
| Chrysene                   |              | U         |       | 0.34             | 20                |
| Perylene-d <sub>12</sub>   |              | IS 6 High | 27.28 |                  |                   |
| Di-n-octylphthalate        |              | U         |       | 0.31             | 20                |
| Benzo(b)fluoranthene       |              | U         |       | 0.42             | 20                |
| Benzo(k)fluoranthene       |              | U         |       | 0.43             | 20                |
| Benzo(a)pyrene             |              | U         |       | 0.43             | 20                |
| Indeno(1,2,3-cd)pyrene     |              | U         |       | 0.44             | 20                |
| Dibenz(a,h)anthracene      |              | U         |       | 0.58             | 20                |
| Benzo(g,h,i)perylene       |              | U         |       | 0.51             | 20                |

Reviewed by           m           Date 03/20/96

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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**ROY F. WESTON**

Project Number: 36062A

Method 8270A

Sample File: YL527

Sample ID: COE-HG-AFTOUT-M23-BT

Client Project: COE HOT GAS PRG

Date Received: 02/06/96

TLI ID: 113-217-3A-E

Date Extracted: 02/07/96

Date Analyzed: 03/08/96

Dilution Factor: 2

**Tentatively Identified Compounds**

| Name                             | RT     | Area     | IS RT  | IS Area | Amount, ug |
|----------------------------------|--------|----------|--------|---------|------------|
| Benzaldehyde                     | 8.358  | 1.2E+08  | 9.096  | 1981678 | 4835       |
| Methyl Ester Benzoic Acid        | 10.269 | 1494525  | 9.096  | 1981678 | 60         |
| Substituted Benzene              | 11.043 | 49167191 | 11.569 | 2239192 | 1757       |
| Substituted Benzaldehyde         | 11.249 | 283057   | 11.569 | 2239192 | 10         |
| Alkyl Methyl Ester Benzoic Acid  | 12.909 | 336455   | 11.569 | 2239192 | 12         |
| Triacetin                        | 13.299 | 9229154  | 11.569 | 2239192 | 330        |
| Aromatic Ketone                  | 13.412 | 307243   | 15.148 | 2626618 | 9          |
| Bibenzyl                         | 15.553 | 1827178  | 15.148 | 2626618 | 56         |
| Benzophenone                     | 16.665 | 359349   | 15.148 | 2626618 | 11         |
| Alkyl Acid                       | 19.501 | 938725   | 18.210 | 3588580 | 21         |
| Substituted Aromatic Hydrocarbon | 24.120 | 1885040  | 23.671 | 6236833 | 24         |
| Substituted Aromatic Hydrocarbon | 25.865 | 4053193  | 27.280 | 4280372 | 76         |

**Triangle Laboratories of RTP, Inc.**

801 Capitola Drive \* Durham, North Carolina 27713

Phone: (919) 544-5729 \* Fax: (919) 544-5491

Printed: 17:36 03/20/96

**ROY F. WESTON**

**Project Number: 36062A**  
**Sample File: YL523**

**Method 8270A TOLUENE**  
**Sample ID: SBLK 020896**

**Client Project: COE HOT GAS PRG**  
**TLI ID: SBLK020896**

**Date Received: / /**  
**Date Extracted: / /**  
**Date Analyzed: 03/08/96**

**Response File: YL518**

**Dilution Factor: 2.00**

| Analyte                            | Amount<br>ug | FLAG | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|------------------------------------|--------------|------|-------|------------------|-------------------|
| 1,4-Dichlorobenzene-d <sub>4</sub> |              | IS 1 | 9.10  |                  |                   |
| Phenol                             |              | U    |       | 2.87             | 20                |
| bis(2-Chloroethyl)ether            |              | U    |       | 3.42             | 20                |
| 2-Chlorophenol                     |              | U    |       | 2.06             | 20                |
| 1,3-Dichlorobenzene                |              | U    |       | 1.75             | 20                |
| 1,4-Dichlorobenzene                |              | U    |       | 1.67             | 20                |
| 1,2-Dichlorobenzene                |              | U    |       | 1.79             | 20                |
| 2,2'-oxybis(1-Chloropropane)       |              | U    |       | 3.52             | 20                |
| Benzyl alcohol                     |              | U    |       | 6.51             | 20                |
| 2-Methylphenol                     |              | U    |       | 3.28             | 20                |
| 3/4-Methylphenol                   |              | U    |       | 3.23             | 20                |
| N-Nitroso-di-n-propylamine         |              | U    |       | 4.33             | 20                |
| Hexachloroethane                   |              | U    |       | 3.50             | 20                |
| Naphthalene-d <sub>8</sub>         |              | IS 2 | 11.57 |                  |                   |
| Nitrobenzene                       |              | U    |       | 2.26             | 20                |
| Isophorone                         |              | U    |       | 1.27             | 20                |
| 2-Nitrophenol                      |              | U    |       | 3.30             | 20                |
| 2,4-Dimethylphenol                 |              | U    |       | 2.78             | 20                |
| bis(2-Chloroethoxy)methane         |              | U    |       | 2.82             | 20                |
| Benzoic acid                       |              | U    |       | 3.72             | 50                |
| 2,4-Dichlorophenol                 |              | U    |       | 2.37             | 20                |
| 1,2,4-Trichlorobenzene             |              | U    |       | 1.93             | 20                |
| Naphthalene                        |              | U    |       | 0.76             | 20                |
| 4-Chloroaniline                    |              | U    |       | 1.83             | 20                |
| Hexachlorobutadiene                |              | U    |       | 2.32             | 20                |
| 4-Chloro-3-methylphenol            |              | U    |       | 2.90             | 20                |

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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ROY F. WESTON

Project Number: 36062A  
Sample File: YL523

Method 8270A TOLUENE  
Sample ID: SBLK 020896

Client Project: COE HOT GAS PRG Date Received: / / Response File: YL518  
TLI ID: SBLK020896 Date Extracted: / /  
Date Analyzed: 03/08/96

Dilution Factor: 2.00

| Analyte                      | Amount<br>ug | FLAG | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|------------------------------|--------------|------|-------|------------------|-------------------|
| 2-Methylnaphthalene          |              | U    |       | 1.13             | 20                |
| Acenaphthene-d <sub>10</sub> |              | IS 3 | 15.16 |                  |                   |
| Hexachlorocyclopentadiene    |              | U    |       | 2.12             | 20                |
| 2,4,6-Trichlorophenol        |              | U    |       | 2.65             | 20                |
| 2,4,5-Trichlorophenol        |              | U    |       | 2.55             | 20                |
| 2-Chloronaphthalene          |              | U    |       | 1.06             | 20                |
| 2-Nitroaniline               |              | U    |       | 3.91             | 50                |
| Dimethylphthalate            |              | U    |       | 0.87             | 20                |
| 2,6-Dinitrotoluene           |              | U    |       | 3.74             | 20                |
| 2,4-Dinitrotoluene           |              | U    |       | 2.44             | 20                |
| Acenaphthylene               |              | U    |       | 0.68             | 20                |
| 3-Nitroaniline               |              | U    |       | 3.40             | 50                |
| Acenaphthene                 |              | U    |       | 1.21             | 20                |
| 2,4-Dinitrophenol            |              | U    |       | 7.72             | 50                |
| 4-Nitrophenol                |              | U    |       | 3.67             | 50                |
| Dibenzofuran                 |              | U    |       | 0.71             | 20                |
| Diethylphthalate             |              | U    |       | 0.67             | 20                |
| 4-Chlorophenyl-phenylether   |              | U    |       | 1.68             | 20                |
| Fluorene                     |              | U    |       | 0.92             | 20                |
| 4-Nitroaniline               |              | U    |       | 3.33             | 50                |
| Phenanthrene-d <sub>10</sub> |              | IS 4 | 18.22 |                  |                   |
| 4,6-Dinitro-2-methylphenol   |              | U    |       | 4.77             | 50                |
| N-Nitrosodiphenylamine       |              | U    |       | 1.53             | 20                |
| 4-Bromophenyl-phenylether    |              | U    |       | 2.21             | 20                |
| Hexachlorobenzene            |              | U    |       | 1.58             | 20                |
| Pentachlorophenol            |              | U    |       | 2.76             | 50                |

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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**ROY F. WESTON**

Project Number: 36062A  
Sample File: YL523

Method 8270A TOLUENE  
Sample ID: SBLK 020896

Client Project: COE HOT GAS PRG  
TLI ID: SBLK020896

Date Received: / /  
Date Extracted: / /  
Date Analyzed: 03/08/96

Response File: YL518

Dilution Factor: 2.00

| Analyte                    | Amount<br>ug | FLAG      | RT    | Det. Limit<br>ug | Quan. Limit<br>ug |
|----------------------------|--------------|-----------|-------|------------------|-------------------|
| Phenanthrene               |              | U         |       | 0.60             | 20                |
| Anthracene                 |              | U         |       | 0.61             | 20                |
| Di-n-butylphthalate        |              | U         |       | 0.35             | 20                |
| Fluoranthene               |              | U         |       | 0.46             | 20                |
| Chrysene-d <sub>12</sub>   |              | IS 5 High | 23.67 |                  |                   |
| Pyrene                     |              | U         |       | 0.32             | 20                |
| Butylbenzylphthalate       |              | U         |       | 0.57             | 20                |
| 3,3'-Dichlorobenzidine     |              | U         |       | 0.92             | 20                |
| bis(2-Ethylhexyl)phthalate |              | U         |       | 0.42             | 20                |
| Benzo(a)anthracene         |              | U         |       | 0.34             | 20                |
| Chrysene                   |              | U         |       | 0.37             | 20                |
| Perylene-d <sub>12</sub>   |              | IS 6 High | 27.30 |                  |                   |
| Di-n-octylphthalate        |              | U         |       | 0.24             | 20                |
| Benzo(b)fluoranthene       |              | U         |       | 0.33             | 20                |
| Benzo(k)fluoranthene       |              | U         |       | 0.34             | 20                |
| Benzo(a)pyrene             |              | U         |       | 0.34             | 20                |
| Indeno(1,2,3-cd)pyrene     |              | U         |       | 0.35             | 20                |
| Dibenz(a,h)anthracene      |              | U         |       | 0.46             | 20                |
| Benzo(g,h,i)perylene       |              | U         |       | 0.40             | 20                |

Reviewed by                     

Date 03/20/96

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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**ROY F. WESTON**

Project Number: 36062A

Method 8270A

Sample File: YL523

Sample ID SBLK 020896

Client Project: COE HOT GAS PRG

Date Received: / /

TLI ID: SBLK 020896

Date Extracted: / /

Date Analyzed: 03/08/96

Dilution Factor: 2

**Tentatively Identified Compounds**

| Name         | RT    | Area   | IS RT | IS Area | Amount, ug |
|--------------|-------|--------|-------|---------|------------|
| Benzaldehyde | 8.286 | 148680 | 9.100 | 2137444 | 6          |

**Triangle Laboratories of RTP, Inc.**

801 Capitola Drive \* Durham, North Carolina 27713

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**PARTICULATE, HYDROCHLORIC ACID, AND CHLORINE**

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Roy F. Weston, Inc.  
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Lionville, Pennsylvania 19341-1333  
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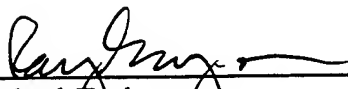
**LIONVILLE LABORATORY  
ANALYTICAL REPORT**

**Client :** COE-HOT GAS  
**RFW# :** 9602L965

**W.O. #:** 02281-012-012-1200-00  
**Date Received:** 02-07-96

**INORGANIC CASE NARRATIVE**

1. This narrative covers the analyses of 4 acetone, 4 filter, 4 sodium hydroxide and 4 sulfuric acid samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The method blanks were within method criteria.
5. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.
6. The matrix spike recovery for Chloride (as Chloride by IC) was within the 75-125% control limits.
7. The replicate analyses were within the 20% RPD control limit.
8. Results for Hydrochloric Acid and Chlorine are reported as total milligrams Chloride per sample volumes received.

  
\_\_\_\_\_  
J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2.23.96  
Date

njpl02-965



# WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF AIR SAMPLES

|                                      | <u>ASTM</u>       | <u>EPA 600</u> | <u>SW846</u>                | <u>OTHER</u>                               |
|--------------------------------------|-------------------|----------------|-----------------------------|--------------------------------------------|
| %Moisture                            | <u>  D2216-80</u> |                |                             | <u>  ILMO4.0 (e)</u>                       |
| %Solids                              |                   |                |                             | <u>  ILMO4.0 (e)</u>                       |
| Hydroboric Acid by IC                |                   |                | <u>  9056</u>               |                                            |
| Hydrochloric Acid by IC              |                   |                | <u>  9056</u> ✓ <u>9057</u> |                                            |
| Hydrofluoric Acid by IC              |                   |                | <u>  9056</u>               |                                            |
| Nitric Acid by IC                    |                   |                | <u>  9056</u>               |                                            |
| Phosphoric Acid by IC                |                   |                | <u>  9056</u>               |                                            |
| Sulfuric Acid by IC                  |                   |                | <u>  9056</u>               |                                            |
| Chromium VI                          |                   |                | <u>  7196A</u>              | <u>  3500D</u>                             |
| Ammonia                              |                   | <u>  350.3</u> |                             |                                            |
| Particulate-Residue                  |                   |                |                             | ✓ <u>40-CFR, PT60, App.A, Meth.5 (f)</u>   |
| Particulate-Filter                   |                   |                |                             | ✓ <u>40-CFR, PT60, App.A, Meth.5 (f)</u>   |
| Sulfur Dioxide                       |                   |                |                             | <u>  40-CFR, PT60, App.A, Meth.6 (f)</u>   |
| Sulfuric Acid Mist                   |                   |                |                             | <u>  40-CFR, PT60, App.A, Meth.8 (f)</u>   |
| Nitrogen Oxide                       |                   |                |                             | <u>  40-CFR, PT60, App.A, Meth.7A (f)</u>  |
| Fluoride, Total                      |                   |                |                             | <u>  40-CFR, PT60, App.A, Meth.13B (f)</u> |
| Hydrogen Chloride                    |                   |                |                             | <u>  40-CFR, PT60, App.A, Meth.26 (f)</u>  |
| Other: <u>Chlorine (as Chloride)</u> |                   |                | Method: <u>9057</u>         |                                            |

# METHOD REFERENCES AND DATA QUALIFIERS

## DATA QUALIFIERS

- U - Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- \* - Indicates that the original sample result is greater than 4x the spike amount added.

## ABBREVIATIONS

- MB - Method or preparation blank.  
MS - Matrix Spike.  
MSD - Matrix Spike Duplicate.  
REP - Sample Replicate.  
LC - Indicates a method LCS or Blank Spike.  
NC - Not calculable, result below the detection limit.

A suffix of -R, -S or -T following these codes indicate a replicate, spike or spike duplicate analysis respectively.

## ANALYTICAL METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020)
3. Test Methods for Evaluating Solid Waste (USEPA SW846).
  - a. Standard Methods for the Examination of Water and Wastewater 16 ed., (1983).
  - b. Standard Methods for the Examination of Water and Wastewater 17 ed., (1988).
  - c. Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986).
  - d. Methods of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
  - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
  - f. Code of Federal Regulations.

## ROY F. WESTON INC.

## INORGANICS DATA SUMMARY REPORT 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WORK ORDER: 02281-012-012-1200-00

| SAMPLE | SITE ID              | ANALYTE                 | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|----------------------|-------------------------|--------|-------|--------------------|--------------------|
| -001   | AFTOUT-PART-R1-FHA   | Particulate             | 3.0    | MG    | 0.10               | 1.0                |
| -002   | AFTOUT-PARTR1FLT1826 | Particulate             | 0.10 u | MG    | 0.10               | 1.0                |
| -003   | AFTOUT-HCL-R1-H2SO4  | Hydrochloric Acid by IC | 2.0    | MG    | 0.80               | 10.0               |
| -004   | AFTOUT-CL2-R1-NAOH   | Chloride by IC          | 0.12   | MG    | 0.10               | 4.0                |
| -005   | AFTOUT-PART-SB-FILT  | Particulate             | 0.40   | MG    | 0.10               | 1.0                |
| -006   | AFTOUT-PART-SB-ACE   | Particulate             | 0.40   | MG    | 0.10               | 1.0                |
| -007   | AFTOUT-HCL-SB-H2SO4  | Hydrochloric Acid by IC | 0.02 u | MG    | 0.02               | 1.0                |
| -008   | AFTOUT-CL2-SB-NAOH   | Chloride by IC          | 0.02 u | MG    | 0.02               | 1.0                |
| -009   | AFTOUT-PART-R2-FHA   | Particulate             | 1.6    | MG    | 0.10               | 1.0                |
| -010   | AFTOUT-PARTR2FLT1832 | Particulate             | 0.10 u | MG    | 0.10               | 1.0                |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WORK ORDER: 02281-012-012-1200-00

| SAMPLE | SITE ID              | ANALYTE                 | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|--------|----------------------|-------------------------|--------|-------|--------------------|--------------------|
| -----  | -----                | -----                   | -----  | ----- | -----              | -----              |
| -011   | AFTOUT-HCL-R2-H2SO4  | Hydrochloric Acid by IC | 1.7    | MG    | 0.67               | 10.0               |
| -012   | AFTOUT-CL2-R2-NAOH   | Chloride by IC          | 0.60   | MG    | 0.30               | 10.0               |
| -013   | AFTOUT-PART-R3-FHA   | Particulate             | 4.1    | MG    | 0.10               | 1.0                |
| -014   | AFTOUT-PARTR3FLT1825 | Particulate             | 0.10 u | MG    | 0.10               | 1.0                |
| -015   | AFTOUT-HCL-R3-H2SO4  | Hydrochloric Acid by IC | 0.06 u | MG    | 0.06               | 1.0                |
| -016   | AFTOUT-CL2-R3-NAOH   | Chloride by IC          | 0.62   | MG    | 0.31               | 10.0               |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WORK ORDER: 02281-012-012-1200-00

| SAMPLE  | SITE ID      | ANALYTE                 | RESULT | UNITS | REPORTING<br>LIMIT | DILUTION<br>FACTOR |
|---------|--------------|-------------------------|--------|-------|--------------------|--------------------|
| -----   | -----        | -----                   | -----  | ----- | -----              | -----              |
| BLANK10 | 96LHCL13-MB1 | Hydrochloric Acid by IC | 0.01 u | MG    | 0.01               | 1.0                |
| BLANK10 | 96LCL213-MB1 | Chloride by IC          | 0.01 u | MG    | 0.01               | 1.0                |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WORK ORDER: 02281-012-012-1200-00

| SAMPLE  | SITE ID            | ANALYTE                | SPIKED<br>SAMPLE | INITIAL<br>RESULT | SPIKED<br>AMOUNT | %RECOV | DILUTION<br>FACTOR (SPK) |
|---------|--------------------|------------------------|------------------|-------------------|------------------|--------|--------------------------|
| -016    | AFTOUT-CL2-R3-NAOH | Chloride by IC         | 6.3              | 0.62              | 6.2              | 91.5   | 10.0                     |
| BLANK10 | 96LHCL13-MB1       | Hydrochloric Acid by I | 0.20             | 0.01u             | 0.20             | 99.5   | 1.0                      |
|         |                    | Hydrochloric Acid by I | 0.19             | 0.01u             | 0.20             | 96.0   | 1.0                      |
| BLANK10 | 96LCL213-MB1       | Chloride by IC         | 0.20             | 0.01u             | 0.20             | 99.5   | 1.0                      |
|         |                    | Chloride by IC MSD     | 0.19             | 0.01u             | 0.20             | 96.0   | 1.0                      |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WORK ORDER: 02281-012-012-1200-00

| SAMPLE  | SITE ID      | ANALYTE                 | SPIKE#1 | SPIKE#2 | %DIFF |
|---------|--------------|-------------------------|---------|---------|-------|
|         |              |                         | %RECOV  | %RECOV  |       |
| BLANK10 | 96LHCL13-MB1 | Hydrochloric Acid by IC | 99.5    | 96.0    | 3.6   |
| BLANK10 | 96LCL213-MB1 | Chloride by IC          | 99.5    | 96.0    | 3.6   |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WORK ORDER: 02281-012-012-1200-00

| SAMPLE  | SITE ID             | ANALYTE                 | INITIAL<br>RESULT | REPLICATE RPD |       |       | DILUTION<br>FACTOR (REP) |
|---------|---------------------|-------------------------|-------------------|---------------|-------|-------|--------------------------|
| -----   | -----               | -----                   | -----             | -----         | ----- | ----- | -----                    |
| -003REP | AFTOUT-HCL-R1-H2SO4 | Hydrochloric Acid by IC | 2.0               | 2.0           | 0.41  |       | 10.0                     |
| -004REP | AFTOUT-CL2-R1-NAOH  | Chloride by IC          | 0.12              | 0.11          | 14.6  |       | 4.0                      |
| -007REP | AFTOUT-HCL-SB-H2SO4 | Hydrochloric Acid by IC | 0.02u             | 0.02u         | NC    |       | 1.0                      |
| -008REP | AFTOUT-CL2-SB-NAOH  | Chloride by IC          | 0.02u             | 0.02u         | NC    |       | 1.0                      |
| -011REP | AFTOUT-HCL-R2-H2SO4 | Hydrochloric Acid by IC | 1.7               | 1.7           | 0.65  |       | 10.0                     |
| -012REP | AFTOUT-CL2-R2-NAOH  | Chloride by IC          | 0.60              | 0.61          | 0.82  |       | 10.0                     |
| -015REP | AFTOUT-HCL-R3-H2SO4 | Hydrochloric Acid by IC | 0.06u             | 0.06u         | NC    |       | 1.0                      |
| -016REP | AFTOUT-CL2-R3-NAOH  | Chloride by IC          | 0.62              | 0.62          | 0.64  |       | 10.0                     |



Roy F. Weston, Inc. - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L965

| CLIENT ID /ANALYSIS    | RFW #   | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|------------------------|---------|-----|----------|------------|-----------|----------|
| AFTOUT-PART-R1-FHA     |         |     |          |            |           |          |
| PARTICULATE-FILTER     | 001     | AI  | 96LPT005 | 01/31/96   | 02/12/96  | 02/17/96 |
| AFTOUT-PART-R1-FLT1826 |         |     |          |            |           |          |
| PARTICULATE-FILTER     | 002     | AI  | 96LPT005 | 01/31/96   | 02/12/96  | 02/17/96 |
| AFTOUT-HCL-R1-H2SO4    |         |     |          |            |           |          |
| HYDROCHLORIC ACID BY   | 003     | AI  | 96LHCL13 | 01/31/96   | 02/19/96  | 02/19/96 |
| HYDROCHLORIC ACID BY   | 003 REP | AI  | 96LHCL13 | 01/31/96   | 02/19/96  | 02/19/96 |
| AFTOUT-CL2-R1-NAOH     |         |     |          |            |           |          |
| CHLORIDE BY IC         | 004     | AI  | 96LCL213 | 01/31/96   | 02/19/96  | 02/19/96 |
| CHLORIDE BY IC         | 004 REP | AI  | 96LCL213 | 01/31/96   | 02/19/96  | 02/19/96 |
| AFTOUT-PART-SB-FILT    |         |     |          |            |           |          |
| PARTICULATE-FILTER     | 005     | AI  | 96LPT005 | 01/31/96   | 02/12/96  | 02/17/96 |
| AFTOUT-PART-SB-ACE     |         |     |          |            |           |          |
| PARTICULATE-FILTER     | 006     | AI  | 96LPT005 | 01/31/96   | 02/12/96  | 02/17/96 |
| AFTOUT-HCL-SB-H2SO4    |         |     |          |            |           |          |
| HYDROCHLORIC ACID BY   | 007     | AI  | 96LHCL13 | 01/31/96   | 02/19/96  | 02/19/96 |
| HYDROCHLORIC ACID BY   | 007 REP | AI  | 96LHCL13 | 01/31/96   | 02/19/96  | 02/19/96 |
| AFTOUT-CL2-SB-NAOH     |         |     |          |            |           |          |
| CHLORIDE BY IC         | 008     | AI  | 96LCL213 | 01/31/96   | 02/19/96  | 02/19/96 |
| CHLORIDE BY IC         | 008 REP | AI  | 96LCL213 | 01/31/96   | 02/19/96  | 02/19/96 |
| AFTOUT-PART-R2-FHA     |         |     |          |            |           |          |
| PARTICULATE-FILTER     | 009     | AI  | 96LPT005 | 02/02/96   | 02/12/96  | 02/17/96 |

Roy F. Weston, Inc. - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L965

| CLIENT ID /ANALYSIS  | RFW #   | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|---------|-----|----------|------------|-----------|----------|
| AFTOUT-PARTR2FLT1832 |         |     |          |            |           |          |
| PARTICULATE-FILTER   | 010     | AI  | 96LPT005 | 02/02/96   | 02/12/96  | 02/17/96 |
| AFTOUT-HCL-R2-H2SO4  |         |     |          |            |           |          |
| HYDROCHLORIC ACID BY | 011     | AI  | 96LHCL13 | 02/02/96   | 02/19/96  | 02/19/96 |
| HYDROCHLORIC ACID BY | 011 REP | AI  | 96LHCL13 | 02/02/96   | 02/19/96  | 02/19/96 |
| AFTOUT-CL2-R2-NAOH   |         |     |          |            |           |          |
| CHLORIDE BY IC       | 012     | AI  | 96LCL213 | 02/02/96   | 02/19/96  | 02/19/96 |
| CHLORIDE BY IC       | 012 REP | AI  | 96LCL213 | 02/02/96   | 02/19/96  | 02/19/96 |
| AFTOUT-PART-R3-FHA   |         |     |          |            |           |          |
| PARTICULATE-FILTER   | 013     | AI  | 96LPT005 | 02/04/96   | 02/12/96  | 02/17/96 |
| AFTOUT-PARTR3FLT1825 |         |     |          |            |           |          |
| PARTICULATE-FILTER   | 014     | AI  | 96LPT005 | 02/04/96   | 02/12/96  | 02/17/96 |
| AFTOUT-HCL-R3-H2SO4  |         |     |          |            |           |          |
| HYDROCHLORIC ACID BY | 015     | AI  | 96LHCL13 | 02/04/96   | 02/19/96  | 02/19/96 |
| HYDROCHLORIC ACID BY | 015 REP | AI  | 96LHCL13 | 02/04/96   | 02/19/96  | 02/19/96 |
| AFTOUT-CL2-R3-NAOH   |         |     |          |            |           |          |
| CHLORIDE BY IC       | 016     | AI  | 96LCL213 | 02/04/96   | 02/19/96  | 02/19/96 |
| CHLORIDE BY IC       | 016 REP | AI  | 96LCL213 | 02/04/96   | 02/19/96  | 02/19/96 |
| CHLORIDE BY IC       | 016 MS  | AI  | 96LCL213 | 02/04/96   | 02/19/96  | 02/19/96 |
| LAB QC:              |         |     |          |            |           |          |
|                      |         |     |          |            |           |          |
| HYDROCHLORIC ACID BY | MB1     | W   | 96LHCL13 | N/A        | 02/19/96  | 02/19/96 |
| HYDROCHLORIC ACID BY | MB1 BS  | W   | 96LHCL13 | N/A        | 02/19/96  | 02/19/96 |

Roy F. Weston, Inc. - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L965

| CLIENT ID /ANALYSIS  | RFW #   | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|---------|-----|----------|------------|-----------|----------|
| HYDROCHLORIC ACID BY | MB1 BSD | W   | 96LHCL13 | N/A        | 02/19/96  | 02/19/96 |
| CHLORIDE BY IC       | MB1     | W   | 96LCL213 | N/A        | 02/19/96  | 02/19/96 |
| CHLORIDE BY IC       | MB1 BS  | W   | 96LCL213 | N/A        | 02/19/96  | 02/19/96 |
| CHLORIDE BY IC       | MB1 BSD | W   | 96LCL213 | N/A        | 02/19/96  | 02/19/96 |



Part 1 HCL/CL

# Custody Transfer Record/Lab Work Request

WESTON Analytics Use Only  
910026965

Client: COE-1407 GAB  
Est. Final Proj. Sampling Date: 02-28-012-012-1200  
Work Order #: 02281-012-012-1200  
Project Contact/Phone: J. O'Neil X7201  
AD Project Manager: K. BAKER  
QC: STA Del SPD JAT  
Date Rec'd: [Signature]  
Account #:

| MATRIX CODES:     | Lab ID                      | Client ID/Description       | Matrix Chosen (V) | MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only |     |          |      |       |
|-------------------|-----------------------------|-----------------------------|-------------------|----|-----|--------|----------------|----------------|---------------------------|-----|----------|------|-------|
|                   |                             |                             |                   |    |     |        |                |                | VOA                       | BNA | Pest/PCB | Herb | INORG |
| 8 - Soil          | 09 COE-H6-AFT01-PART-13-FHA | 09 COE-H6-AFT01-PART-13-FHA | 13                |    |     | 13     | 02/28/01       |                |                           |     |          |      |       |
| 9E - Sediment     | 10 COE-H6-AFT01-PART-13-FHA | 10 COE-H6-AFT01-PART-13-FHA | 13                |    |     | 13     | 02/28/01       |                |                           |     |          |      |       |
| 80 - Solid        | 11 COE-H6-AFT01-PART-13-FHA | 11 COE-H6-AFT01-PART-13-FHA | 13                |    |     | 13     | 02/28/01       |                |                           |     |          |      |       |
| SL - Sludge       | 12 COE-H6-AFT01-PART-13-FHA | 12 COE-H6-AFT01-PART-13-FHA | 13                |    |     | 13     | 02/28/01       |                |                           |     |          |      |       |
| W - Water         | 13 COE-H6-AFT01-PART-13-FHA | 13 COE-H6-AFT01-PART-13-FHA | 13                |    |     | 13     | 02/28/01       |                |                           |     |          |      |       |
| O - Oil           | 14 COE-H6-AFT01-PART-13-FHA | 14 COE-H6-AFT01-PART-13-FHA | 13                |    |     | 13     | 02/28/01       |                |                           |     |          |      |       |
| A - Air           | 15 COE-H6-AFT01-PART-13-FHA | 15 COE-H6-AFT01-PART-13-FHA | 13                |    |     | 13     | 02/28/01       |                |                           |     |          |      |       |
| DS - Drum Solids  | 16 COE-H6-AFT01-PART-13-FHA | 16 COE-H6-AFT01-PART-13-FHA | 13                |    |     | 13     | 02/28/01       |                |                           |     |          |      |       |
| DL - Drum Liquids |                             |                             |                   |    |     |        |                |                |                           |     |          |      |       |
| L - EP/ICLP       |                             |                             |                   |    |     |        |                |                |                           |     |          |      |       |
| Leachate          |                             |                             |                   |    |     |        |                |                |                           |     |          |      |       |
| WI - Wipe         |                             |                             |                   |    |     |        |                |                |                           |     |          |      |       |
| X - Other         |                             |                             |                   |    |     |        |                |                |                           |     |          |      |       |
| F - Fish          |                             |                             |                   |    |     |        |                |                |                           |     |          |      |       |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

WESTON Analytics Use Only

Samples were:

1) Shipped \_\_\_\_\_ or \_\_\_\_\_

Hand Delivered \_\_\_\_\_

Airbill # \_\_\_\_\_

2) Ambient or Chilled \_\_\_\_\_

3) Received in \_\_\_\_\_

Condition: \_\_\_\_\_

4) Label Indicate \_\_\_\_\_

Properly Preserved \_\_\_\_\_

5) Received Within \_\_\_\_\_

Holding Times \_\_\_\_\_

COC Tape was:

1) Present on Outer Package Y or N

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

5) Received Within Holding Times Y or N

6) COC Record Present Upon Sample Rec't Y or N

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

WESTON

## Particulate Sample Analyses

Prep Batch: 945PT005  
Worksheet: 170312

|                | Beaker # | Volume ml | Tare (1) grams | Tare (2) grams | Tare Ave. | Final (1) grams | Final (2) grams | Avg. Final Wt. grams | Wt. grams | Wt. milligrams |
|----------------|----------|-----------|----------------|----------------|-----------|-----------------|-----------------|----------------------|-----------|----------------|
| FHA            | 945-1    | 118       | 109.9491       | 109.9468       | 109.9490  | 109.9519        | 109.9521        | 109.9520             | 0.0030    | 3.0            |
| Filter, # 1826 | —        | —         | 0.3883         | 0.3882         | 0.3882    | 0.3856          | 0.3860          | 0.3858               | -0.0024   | -2.4           |
| Filter, #      | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |
| FH TOTAL       | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |
| BHW            | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |
| BHA            | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |

Comments: Filter ripped in several small pieces

|                | Beaker # | Volume ml | Tare (1) grams | Tare (2) grams | Tare Ave. | Final (1) grams | Final (2) grams | Avg. Final Wt. grams | Wt. grams | Wt. milligrams |
|----------------|----------|-----------|----------------|----------------|-----------|-----------------|-----------------|----------------------|-----------|----------------|
| FHA            | 945-9    | 110       | 123.8712       | 123.8708       | 123.8710  | 123.8725        | 123.8727        | 123.8726             | 0.0016    | 1.6            |
| Filter, # 1832 | —        | —         | 0.3826         | 0.3827         | 0.3826    | 0.3799          | 0.3804          | 0.3802               | -0.0024   | -2.4           |
| Filter, #      | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |
| FH TOTAL       | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |
| BHW            | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |
| BHA            | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |

Comments: Filter ripped several small pieces

|                | Beaker # | Volume ml | Tare (1) grams | Tare (2) grams | Tare Ave. | Final (1) grams | Final (2) grams | Avg. Final Wt. grams | Wt. grams | Wt. milligrams |
|----------------|----------|-----------|----------------|----------------|-----------|-----------------|-----------------|----------------------|-----------|----------------|
| FHA            | 945-13   | 148       | 113.3232       | 113.3230       | 113.3231  | 113.3271        | 113.3272        | 113.3272             | 0.0041    | 4.1            |
| Filter, # 1825 | —        | —         | 0.3902         | 0.3904         | 0.3903    | 0.3872          | 0.3876          | 0.3874               | -0.0029   | -2.9           |
| Filter, #      | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |
| FH TOTAL       | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |
| BHW            | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |
| BHA            | —        | —         | —              | —              | —         | —               | —               | —                    | —         | —              |

Comments: Filter ripped - several small pieces

|                 | Beaker # | Volume ml | Tare (1) grams | Tare (2) grams | Tare Ave. | Final (1) grams | Final (2) grams | Avg. Final Wt. grams | Wt. grams | Wt. milligrams |
|-----------------|----------|-----------|----------------|----------------|-----------|-----------------|-----------------|----------------------|-----------|----------------|
| Acetone BLK     | 945-6    | 250       | 114.0227       | 114.0229       | 114.0238  | 114.0241        | 114.0242        | 114.0242             | 0.0004    | 0.4            |
| Filter BLK 1831 | —        | —         | 0.3868         | 0.3868         | 0.3868    | 0.3807          | 0.3810          | 0.3808               | 0.0004    | 0.4            |

CODE: FHA = Front half acetone BHW = Back half water (impurities contents + water weight) BHA = Back half acetone was FH TOTAL = Front half catch weight TOTAL = Total train catch weight  
 Analyzed: J. W. W. Date: 2/17/96 Reviewed by: [Signature]  
 Balance # 5023 Balance 100g = 51.9914g @ 18 °C  
 Date: 2-18-96

\* Filter number on filter is 1831. Filter number on chain is 1833. Reported Tare Value for 1831.



Logbook # 5305

Test: IC Anions

Method # 21-15L-0300.0 Rev 02

Analysis Logbook # 5306

Prep Date: 2-19-96

Instrument: Dionex-2020i

Prep Batch: 96LIC013

Analyst: M. Carey

Start Time: 0946

End Time: 16 26

[illegible]

| Standard: | ID          | Prep Date | Expir Date |
|-----------|-------------|-----------|------------|
| MS        | 5305-102-03 | 1-22-96   | 2-22-96    |

Reviewed By/Date:

Reviewed By/Date: Lizeng - 02/21/96 Page # 014

**RFW 21-21-018/R-01/96**

Page # 014



## IC ANALYSIS SUMMARY: INORGANIC ANIONS

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Worksheet: LC 4219Prep. Logbook #: 5305

**Example Calculation:**

| Standard      | ID          | Prep Date | Expt Date |
|---------------|-------------|-----------|-----------|
| HCY KODUP LCS | 5705-104-33 | 2-19-96   | 2-20-96   |
| NAI CCV       | 13          | 1         | 1         |
| NAI           | 5705-104-03 | 1-22-96   | 2-20-96   |

06/12/20

MI W 31 211 .02111 12 95

## IC ANALYSIS SUMMARY: INORGANIC ANIONS

OP #: 21-15L-0300, Rev. 02

Analyst: M. Carney

Rev Date: 2-19-86

**Instrument:**

Prep. Logbook #:

Dionex-2020i

5305

**Logbook:**

**Prep Batch:**

**Worksheet:**

| Analyst: 2-19-96      |                       | Prep. Logbook #: 5325 |                                | Worksheet: |                                 |                                    |             |            |            |            |      |       |             |          |
|-----------------------|-----------------------|-----------------------|--------------------------------|------------|---------------------------------|------------------------------------|-------------|------------|------------|------------|------|-------|-------------|----------|
| Anlon→<br>Sample ID # | CL<br>(mg/L)<br>mg/kg | Dil.                  | HCL AS mg/L<br>(mg/L)<br>mg/kg | Dil.       | CL 2 AS mg/L<br>(mg/L)<br>mg/kg | Detection Limit<br>(mg/L)<br>mg/kg | TARA Sample |            |            | mg/L mg/kg | Dil. | % Sol | Prep. w/vol | Comments |
|                       |                       |                       |                                |            |                                 |                                    | mg/L mg/kg  | mg/L mg/kg | mg/L mg/kg |            |      |       |             |          |
| -011K                 | 2.513                 | 10                    | 1.684                          | 10         |                                 | 0.670                              | mg          | 670        | mc         |            |      |       |             |          |
| 015                   | 0                     | -                     | 0                              | -          |                                 | 0.060                              |             | 600        |            |            |      |       |             |          |
| 015K                  | 0                     | -                     | 0                              | -          |                                 | 0.060                              |             | 600        |            |            |      |       |             |          |
| 007                   | 0.098                 | -                     | 0.024                          | -          |                                 | 0.025                              |             | 250        |            |            |      |       |             |          |
| 007K                  | 0                     | -                     | 0                              | -          |                                 | 0.025                              |             | 250        |            |            |      |       |             |          |
| 008                   | 0                     | -                     | 0                              | -          |                                 | 0.020                              |             | 200        |            |            |      |       |             |          |
| 008K                  | 0                     | -                     | 0                              | -          |                                 | 0.020                              |             | 200        |            |            |      |       |             |          |
| 000                   | 0                     | -                     | 0                              | -          |                                 | 0.010                              |             | 100        |            |            |      |       |             |          |
| 000                   | 1.931                 | -                     | 0.92                           | -          |                                 | 0.010                              |             | 100        |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
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|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |
|                       |                       |                       |                                |            |                                 |                                    |             |            |            |            |      |       |             |          |

duplicate "C" = matrix spike "T" = matrix spike duplicate

| Standard:    | ID          | Prep Date | Expir Date |
|--------------|-------------|-----------|------------|
| KM KUNIP LCS | 5305-104-33 | 2-19-86   | 2-20-86    |
| PAI CCW      | -13         | I         | I          |
| MS           | 5305-104-03 | 1-22-86   | 2-22-86    |

### Example Calculation:

$Y = ax + b$   
 $Y$  = Instrument reading  
 $a$  = slope of the regression line  
 $b$  = Y Intercept  
 $x$  = concentration  
 result  $X = \text{dilution factor}$

Reviewed By/Date:

~~96/16/21/96~~

Page 4

# WESTON Analytics Inorganics Section

Date of Prep: 02/19/96

Date of Analysis: 02/19/96

Run Batch: 98L1C013

Worksheet: IC0219

Computer #: AT 256

Directory: INORGANICS

Method: EPA-300

Analyst: MC

Instrument: DIONE

CALIB DATA

SLOPE: 1.00

INTERCEPT: 0.00

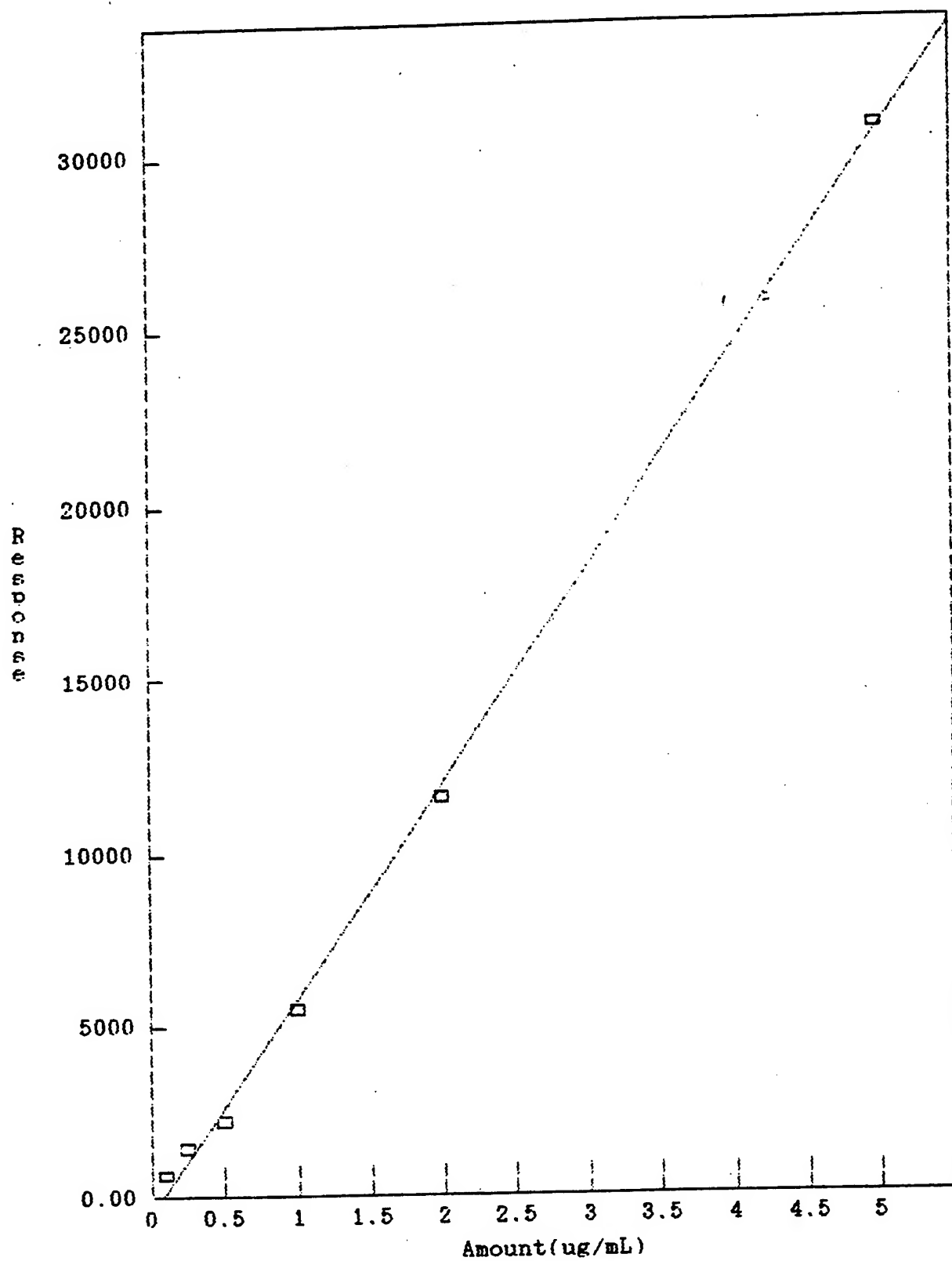
CORRELATION COEFF.: 1

| REF        | TEST | INST. | INITIAL | DILUTION | C/D    | FINAL  | DETECTION | REPLICATE | REP   | SPIKE  | LCS   | AMT  | LCS | REC'D | PREP   | INITIAL | SOILS |
|------------|------|-------|---------|----------|--------|--------|-----------|-----------|-------|--------|-------|------|-----|-------|--------|---------|-------|
| SAMPLE ID  | TEST | ABS   | RESULT  | FACTOR   |        | RESULT | LIMIT     | ORIG      | %     | LEVEL  | %     | %    | %   | %     | BATCH  | SAMPLE  | FREP  |
|            |      |       |         |          |        |        |           | SAMPLE    | DIFF  | 5.00   |       |      |     |       |        | WT.     | VOL   |
|            |      |       |         |          |        |        |           | RESULT    |       | AMOUNT |       |      |     |       |        | REC'D   | TIP   |
| 98L13-H01  | ICDL | 0.009 | 0.009   | 1        | 1.0000 | 0.009  | 0.010 MG  | 0.009     |       | 0.2    | 0.200 | 95.0 |     |       | 98L13  | 100     |       |
| 98L13-H01  | ICDL | 0.199 | 0.199   | 1        | 1.0000 | 0.199  | 0.010 MG  | 0.199     |       | 0.2    | 0.200 | 91.5 |     |       | 98L13  | 100     |       |
| 98L13-H01  | ICDL | 0.192 | 0.192   | 1        | 1.0000 | 0.192  | 0.010 MG  | 0.192     | 3.8   | 0.2    | 0.200 | 91.5 |     |       | 98L13  | 100     |       |
| 98L13-H01  | ICDL | 1.965 | 1.965   | 10       | 1.0000 | 1.965  | 0.000 MG  | 1.965     | 0.4   |        |       |      |     |       | 98L13  | 800     |       |
| 98L13-H01  | ICDL | 1.957 | 1.957   | 10       | 1.0000 | 1.957  | 0.000 MG  | 1.957     | 0.4   |        |       |      |     |       | 98L13  | 800     |       |
| 98L13-H01  | ICDL | 1.695 | 1.695   | 10       | 1.0000 | 1.695  | 0.010 MG  | 1.695     | 0.7   |        |       |      |     |       | 98L13  | 670     |       |
| 98L13-H01  | ICDL | 1.684 | 1.684   | 10       | 1.0000 | 1.684  | 0.010 MG  | 1.684     | 0.7   |        |       |      |     |       | 98L13  | 670     |       |
| 98L13-H01  | ICDL | 0.009 | 0.009   | 1        | 1.0000 | 0.009  | 0.000 MG  | 0.009     |       |        |       |      |     |       | 98L13  | 620     |       |
| 98L13-H01  | ICDL | 0.000 | 0.000   | 1        | 1.0000 | 0.000  | 0.000 MG  | 0.000     | 0.0   |        |       |      |     |       | 98L13  | 620     |       |
| 98L13-H01  | ICDL | 0.024 | 0.024   | 1        | 1.0000 | 0.024  | 0.025 MG  | 0.024     | 200.0 |        |       |      |     |       | 98L13  | 250     |       |
| 98L13-H01  | ICDL | 0.009 | 0.009   | 1        | 1.0000 | 0.009  | 0.025 MG  | 0.009     |       |        |       |      |     |       | 98L13  | 250     |       |
| 98L13-H01  | ICDL | 0.009 | 0.009   | 1        | 1.0000 | 0.009  | 0.010 MG  | 0.009     |       | 0.2    | 0.200 | 96.0 |     |       | 98L13  | 100     |       |
| 98L13-H01  | ICDL | 0.192 | 0.192   | 1        | 1.0000 | 0.192  | 0.010 MG  | 0.192     |       |        |       |      |     |       | 98L13  | 100     |       |
| 98L213-H01 | ICDL | 0.009 | 0.009   | 1        | 1.0000 | 0.009  | 0.010 MG  | 0.009     |       |        |       |      |     |       | 98L213 | 100     |       |
| 98L213-H01 | ICDL | 0.199 | 0.199   | 1        | 1.0000 | 0.199  | 0.010 MG  | 0.199     |       | 0.2    | 0.200 | 95.0 |     |       | 98L213 | 100     |       |
| 98L213-H01 | ICDL | 0.192 | 0.192   | 1        | 1.0000 | 0.192  | 0.010 MG  | 0.192     | 3.8   | 0.2    | 0.200 | 91.5 |     |       | 98L213 | 100     |       |
| 98L213-H01 | ICDL | 0.125 | 0.125   | 4        | 1.0000 | 0.125  | 0.100 MG  | 0.125     | 14.6  |        |       |      |     |       | 98L213 | 250     |       |
| 98L213-H01 | ICDL | 0.100 | 0.100   | 4        | 1.0000 | 0.100  | 0.100 MG  | 0.100     |       |        |       |      |     |       | 98L213 | 250     |       |
| 98L213-H01 | ICDL | 0.605 | 0.605   | 10       | 1.0000 | 0.605  | 0.300 MG  | 0.605     | 0.8   |        |       |      |     |       | 98L213 | 300     |       |
| 98L213-H01 | ICDL | 0.610 | 0.610   | 10       | 1.0000 | 0.610  | 0.300 MG  | 0.610     | 0.8   |        |       |      |     |       | 98L213 | 300     |       |
| 98L213-H01 | ICDL | 0.619 | 0.619   | 10       | 1.0000 | 0.619  | 0.310 MG  | 0.619     | 0.6   |        |       |      |     |       | 98L213 | 310     |       |
| 98L213-H01 | ICDL | 0.623 | 0.623   | 10       | 1.0000 | 0.623  | 0.310 MG  | 0.623     | 0.6   |        |       |      |     |       | 98L213 | 310     |       |
| 98L213-H01 | ICDL | 6.292 | 6.292   | 10       | 1.0000 | 6.292  | 0.020 MG  | 6.292     |       | 6.2    | 6.200 | 91.5 |     |       | 98L213 | 200     |       |
| 98L213-H01 | ICDL | 0.000 | 0.000   | 1        | 1.0000 | 0.000  | 0.020 MG  | 0.000     | 0.0   |        |       |      |     |       | 98L213 | 200     |       |
| 98L213-H01 | ICDL | 0.000 | 0.000   | 1        | 1.0000 | 0.000  | 0.020 MG  | 0.000     | 0.0   |        |       |      |     |       | 98L213 | 200     |       |
| 98L213-H01 | ICDL | 0.000 | 0.000   | 1        | 1.0000 | 0.000  | 0.010 MG  | 0.000     |       | 0.2    | 0.200 | 96.0 |     |       | 98L213 | 100     |       |
| 98L213-H01 | ICDL | 0.192 | 0.192   | 1        | 1.0000 | 0.192  | 0.010 MG  | 0.192     |       |        |       |      |     |       | 98L213 | 100     |       |

DIONEX SCHEDULE - C:\DX\SCHEDULE\021996.SCH

| #  | Sample Name          | Method      | Data File   | Vol. | Dil. | Int.Std. |
|----|----------------------|-------------|-------------|------|------|----------|
| 1  | BLANK 02/19/96 09:46 | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 2  | AUTOCAL1             | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 3  | AUTOCAL2             | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 4  | AUTOCAL3             | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 5  | AUTOCAL4             | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 6  | AUTOCAL5             | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 7  | AUTOCAL6             | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 8  | 10 PPM               | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 9  | 96LIC013-ICV         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 10 | 96LIC013-ICB         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 11 | 96LIC013-ICV 2       | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 12 | 9602L965-004         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 13 | 9602L965-004R        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 14 | 9602L965-012         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 15 | 9602L965-012R        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 16 | 9602L965-016         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 17 | 9602L965-016R        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 18 | 9602L965-016S        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 19 | BLANK                | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 20 | CCV                  | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 21 | CCB                  | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 22 | 9602L965-003         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 23 | 9602L965-003R        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 24 | 9602L965-011         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 25 | 9602L965-011R        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 26 | 9602L965-015         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 27 | 9602L965-015L        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 28 | BLANK                | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 29 | CCV                  | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 30 | CCB                  | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 31 | 9602L965-007         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 32 | 9602L965-007L        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 33 | BLANK                | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 34 | 9602L965-008         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 35 | 9602L965-008L        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 36 | BLANK                | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 37 | BLANK                | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 38 | 9602L965-004         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 10   | 1        |
| 39 | 9602L965-004R        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 40 | BLANK                | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 41 | CCV                  | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 42 | CCB                  | ..\AS4A9057 | ..\RAWDATA1 | 1    | 4    | 1        |
| 43 | 9602L965-004         | ..\AS4A9057 | ..\RAWDATA1 | 1    | 4    | 1        |
| 44 | 9602L965-004L        | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 45 | BLANK                | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 46 | CCV                  | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 47 | CCB 02/19/96 16:26   | ..\AS4A9057 | ..\RAWDATA1 | 1    | 1    | 1        |
| 48 | HALT                 | ..\HALT.met | ..\RAWDATA1 | 1    | 1    | 1        |

Method: AS4A9057.MBT -method updated: 10:51 on 10-20-99  
Component: CHLORIDE  
Fit Type: Linear  
 $r^2: 0.998722$   
 $\text{Amt} = \text{Resp} * 0.0001617 + 0.06977$   
 $\text{Resp} = \text{Amt} * 6185 + -431.5$   
Standardization: External  
Calibration: Height



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**METALS**

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Roy F. Weston, Inc. - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L964

| CLIENT ID /ANALYSIS  | RFW #   | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|---------|-----|---------|------------|-----------|----------|
| AFTOUT-MMTL-R1-KMn4  |         |     |         |            |           |          |
| MERCURY, TOTAL       | 004     | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| AFTOUT-MMTL-R1-HCL   |         |     |         |            |           |          |
| MERCURY, TOTAL       | 005     | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| MERCURY, TOTAL       | 005 REP | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| MERCURY, TOTAL       | 005 MS  | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| MERCURY, TOTAL       | 005 MSD | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| AFTOUT-MMTL-SB-HNO3  |         |     |         |            |           |          |
| SILVER, TOTAL        | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| ARSENIC, TOTAL       | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| BARIUM, TOTAL        | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| BERYLLIUM, TOTAL     | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| CADMIUM, TOTAL       | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| CHROMIUM, TOTAL      | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| MERCURY, TOTAL       | 008     | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| NICKEL, TOTAL        | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| LEAD, TOTAL          | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| ANTIMONY, TOTAL      | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| SELENIUM, TOTAL      | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| THALLIUM, TOTAL      | 008     | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/19/96 |
| AFTOUT-MMTL-SB-KMNO4 |         |     |         |            |           |          |
| MERCURY, TOTAL       | 009     | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| AFTOUT-MMTL-SB-BHHCL |         |     |         |            |           |          |
| MERCURY, TOTAL       | 010     | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| AFTOUT-METLS-R2BHHN3 |         |     |         |            |           |          |
| SILVER, TOTAL        | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |

Roy F. Weston, Inc. - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L964

| CLIENT ID /ANALYSIS | RFW #   | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|---------|-----|---------|------------|-----------|----------|
| ARSENIC, TOTAL      | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| BARIUM, TOTAL       | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| BERYLLIUM, TOTAL    | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| CADMIUM, TOTAL      | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| CHROMIUM, TOTAL     | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| MERCURY, TOTAL      | 013     | AI  | 96C0095 | 02/02/96   | 02/19/96  | 02/19/96 |
| MERCURY, TOTAL      | 013 REP | AI  | 96C0095 | 02/02/96   | 02/19/96  | 02/19/96 |
| MERCURY, TOTAL      | 013 MS  | AI  | 96C0095 | 02/02/96   | 02/19/96  | 02/19/96 |
| MERCURY, TOTAL      | 013 MSD | AI  | 96C0095 | 02/02/96   | 02/19/96  | 02/19/96 |
| NICKEL, TOTAL       | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| LEAD, TOTAL         | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| ANTIMONY, TOTAL     | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| SELENIUM, TOTAL     | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| THALLIUM, TOTAL     | 013     | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |

AFTOUT-METLS-R2-KMN4

|                |         |    |         |          |          |          |
|----------------|---------|----|---------|----------|----------|----------|
| MERCURY, TOTAL | 014     | AI | 96C0095 | 02/02/96 | 02/19/96 | 02/19/96 |
| MERCURY, TOTAL | 014 REP | AI | 96C0095 | 02/02/96 | 02/19/96 | 02/19/96 |
| MERCURY, TOTAL | 014 MS  | AI | 96C0095 | 02/02/96 | 02/19/96 | 02/19/96 |
| MERCURY, TOTAL | 014 MSD | AI | 96C0095 | 02/02/96 | 02/19/96 | 02/19/96 |

AFTOUT-METLS-R2-HCL

|                |     |    |         |          |          |          |
|----------------|-----|----|---------|----------|----------|----------|
| MERCURY, TOTAL | 015 | AI | 96C0095 | 02/02/96 | 02/19/96 | 02/19/96 |
|----------------|-----|----|---------|----------|----------|----------|

AFTOUT-METLS-R3BHHN3

|                  |     |    |         |          |          |          |
|------------------|-----|----|---------|----------|----------|----------|
| SILVER, TOTAL    | 018 | AI | 96L0322 | 02/04/96 | 02/17/96 | 02/19/96 |
| ARSENIC, TOTAL   | 018 | AI | 96L0322 | 02/04/96 | 02/17/96 | 02/19/96 |
| BARIUM, TOTAL    | 018 | AI | 96L0322 | 02/04/96 | 02/17/96 | 02/19/96 |
| BERYLLIUM, TOTAL | 018 | AI | 96L0322 | 02/04/96 | 02/17/96 | 02/19/96 |
| CADMIUM, TOTAL   | 018 | AI | 96L0322 | 02/04/96 | 02/17/96 | 02/19/96 |
| CHROMIUM, TOTAL  | 018 | AI | 96L0322 | 02/04/96 | 02/17/96 | 02/19/96 |
| MERCURY, TOTAL   | 018 | AI | 96C0095 | 02/04/96 | 02/19/96 | 02/19/96 |
| NICKEL, TOTAL    | 018 | AI | 96L0322 | 02/04/96 | 02/17/96 | 02/19/96 |
| LEAD, TOTAL      | 018 | AI | 96L0322 | 02/04/96 | 02/17/96 | 02/19/96 |
| ANTIMONY, TOTAL  | 018 | AI | 96L0322 | 02/04/96 | 02/17/96 | 02/19/96 |



Roy F. Weston, Inc. - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L964

| CLIENT ID /ANALYSIS  | RFW # | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|-------|-----|---------|------------|-----------|----------|
| SELENIUM, TOTAL      | 018   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| THALLIUM, TOTAL      | 018   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| AFTOUT-METLS-R3-KMN4 |       |     |         |            |           |          |
| MERCURY, TOTAL       | 019   | AI  | 96C0095 | 02/04/96   | 02/19/96  | 02/19/96 |
| AFTOUT-METLS-R3-HCL  |       |     |         |            |           |          |
| MERCURY, TOTAL       | 020   | AI  | 96C0095 | 02/04/96   | 02/19/96  | 02/19/96 |
| OUT-METLS-PTRA-HNO3  |       |     |         |            |           |          |
| SILVER, TOTAL        | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| ARSENIC, TOTAL       | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| BARIUM, TOTAL        | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| BERYLLIUM, TOTAL     | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| CADMIUM, TOTAL       | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| CHROMIUM, TOTAL      | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| MERCURY, TOTAL       | 021   | AI  | 96C0095 | 01/30/96   | 02/19/96  | 02/19/96 |
| NICKEL, TOTAL        | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| LEAD, TOTAL          | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| ANTIMONY, TOTAL      | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| SELENIUM, TOTAL      | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| THALLIUM, TOTAL      | 021   | AI  | 96L0322 | 01/30/96   | 02/17/96  | 02/19/96 |
| COMP R1              |       |     |         |            |           |          |
| SILVER, TOTAL        | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| ARSENIC, TOTAL       | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| BARIUM, TOTAL        | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| BERYLLIUM, TOTAL     | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| CADMIUM, TOTAL       | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| CHROMIUM, TOTAL      | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| MERCURY, TOTAL       | 023   | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| NICKEL, TOTAL        | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| LEAD, TOTAL          | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| ANTIMONY, TOTAL      | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |

Roy F. Weston, Inc. - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L964.

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|-------|-----|---------|------------|-----------|----------|
| SELENIUM, TOTAL     | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| THALLIUM, TOTAL     | 023   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| COMP-SB             |       |     |         |            |           |          |
| SILVER, TOTAL       | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| ARSENIC, TOTAL      | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| BARIUM, TOTAL       | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| BERYLLIUM, TOTAL    | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| CADMIUM, TOTAL      | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| CHROMIUM, TOTAL     | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| MERCURY, TOTAL      | 024   | AI  | 96C0095 | 01/31/96   | 02/19/96  | 02/19/96 |
| NICKEL, TOTAL       | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| LEAD, TOTAL         | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| ANTIMONY, TOTAL     | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| SELENIUM, TOTAL     | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| THALLIUM, TOTAL     | 024   | AI  | 96L0322 | 01/31/96   | 02/17/96  | 02/20/96 |
| COMP R2             |       |     |         |            |           |          |
| SILVER, TOTAL       | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| ARSENIC, TOTAL      | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| BARIUM, TOTAL       | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| BERYLLIUM, TOTAL    | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| CADMIUM, TOTAL      | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| CHROMIUM, TOTAL     | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| MERCURY, TOTAL      | 025   | AI  | 96C0095 | 02/02/96   | 02/19/96  | 02/19/96 |
| NICKEL, TOTAL       | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| LEAD, TOTAL         | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| ANTIMONY, TOTAL     | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| SELENIUM, TOTAL     | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| THALLIUM, TOTAL     | 025   | AI  | 96L0322 | 02/02/96   | 02/17/96  | 02/19/96 |
| COMP R3             |       |     |         |            |           |          |
| SILVER, TOTAL       | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| ARSENIC, TOTAL      | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| BARIUM, TOTAL       | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |

Roy F. Weston, Inc. - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

RFW LOT # : 9602L964.

DATE RECEIVED: 02/07/96

| CLIENT ID / ANALYSIS | RFW # | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|-------|-----|---------|------------|-----------|----------|
| BERYLLIUM, TOTAL     | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| CADMIUM, TOTAL       | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| CHROMIUM, TOTAL      | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| MERCURY, TOTAL       | 026   | AI  | 96C0095 | 02/04/96   | 02/19/96  | 02/19/96 |
| NICKEL, TOTAL        | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| LEAD, TOTAL          | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| ANTIMONY, TOTAL      | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| SELENIUM, TOTAL      | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |
| THALLIUM, TOTAL      | 026   | AI  | 96L0322 | 02/04/96   | 02/17/96  | 02/19/96 |

LAB QC:

|                      |        |    |         |     |          |          |
|----------------------|--------|----|---------|-----|----------|----------|
| MERCURY LABORATORY   | LC1 BS | W  | 96C0095 | N/A | 02/19/96 | 02/19/96 |
| MERCURY LABORATORY   | LC2 BS | W  | 96C0095 | N/A | 02/19/96 | 02/19/96 |
| MERCURY, TOTAL       | MB1    | W  | 96C0095 | N/A | 02/19/96 | 02/19/96 |
| SILVER LABORATORY    | LC1 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| SILVER LABORATORY    | LC2 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| SILVER, TOTAL        | MB1    | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| ARSENIC LABORATORY   | LC1 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| ARSENIC LABORATORY   | LC2 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| ARSENIC, TOTAL       | MB1    | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| BARIUM LABORATORY    | LC1 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| BARIUM LABORATORY    | LC2 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| BARIUM, TOTAL        | MB1    | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| BERYLLIUM LABORATORY | LC1 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| BERYLLIUM LABORATORY | LC2 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| BERYLLIUM, TOTAL     | MB1    | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| CADMIUM LABORATORY   | LC1 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| CADMIUM LABORATORY   | LC2 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| CADMIUM, TOTAL       | MB1    | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| CHROMIUM LABORATORY  | LC1 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| CHROMIUM LABORATORY  | LC2 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| CHROMIUM, TOTAL      | MB1    | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| NICKEL LABORATORY    | LC1 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| NICKEL LABORATORY    | LC2 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| NICKEL, TOTAL        | MB1    | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| LEAD LABORATORY      | LC1 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |
| LEAD LABORATORY      | LC2 BS | AI | 96L0322 | N/A | 02/17/96 | 02/19/96 |

Roy F. Weston, Inc. - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L964

| CLIENT ID /ANALYSIS | RFW #  | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|--------|-----|---------|------------|-----------|----------|
| LEAD, TOTAL         | MB1    | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |
| ANTIMONY LABORATORY | LC1 BS | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |
| ANTIMONY LABORATORY | LC2 BS | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |
| ANTIMONY, TOTAL     | MB1    | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |
| SELENIUM LABORATORY | LC1 BS | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |
| SELENIUM LABORATORY | LC2 BS | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |
| SELENIUM, TOTAL     | MB1    | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |
| THALLIUM LABORATORY | LC1 BS | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |
| THALLIUM LABORATORY | LC2 BS | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |
| THALLIUM, TOTAL     | MB1    | AI  | 96L0322 | N/A        | 02/17/96  | 02/19/96 |

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**WESTON**

## **Chain of Custody**



011





WESTON Analytics Use Only  
96022964

# Custody Transfer Record/Lab Work Request

Metals

Client CDE HOT GAS  
Est. Final Proj. Sampling Date 012-012-1200  
Work Order # 03281  
Project Contact/Phone # 3-Dive.11 X720  
AD Project Manager K. Becker  
QC 510 Del 502 TAT 1  
Date Rec'd \_\_\_\_\_  
Account # \_\_\_\_\_

| MATRIX CODES: | Lab ID                         | Client ID/Description | Matrix QC Chosen (✓) | Matrix MS MSD | Matrix | Date Collected | Time Collected | ANALYSES REQUESTED | ORGANIC | INORG | WESTON Analytics Use Only |
|---------------|--------------------------------|-----------------------|----------------------|---------------|--------|----------------|----------------|--------------------|---------|-------|---------------------------|
| B - Soil      |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| SE - Sediment |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| SO - Solid    |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| SL - Sludge   |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| W - Water     |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| O - Oil       |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| A - Air       |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| DB - Drum     |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| DL - Drum     |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| L - EP/CLP    |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| W - Waste     |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| X - Other     |                                |                       |                      |               |        |                |                |                    |         |       |                           |
| F - Fish      |                                |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 01 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 02 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 13 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 14 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 15 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 16 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 17 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 18 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 19 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |
|               | 20 CDE-H6-AFTOY-MEMO-R3-FH-HAL |                       |                      |               |        |                |                |                    |         |       |                           |

DATE/REVISIONS:  
1. 12/02/03 FH-HAL-03-00-01  
2. 01 FH-HAL-03-00-01  
3. 12/02/03 by [signature]  
4. \_\_\_\_\_  
5. \_\_\_\_\_  
6. \_\_\_\_\_

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS  
Special Instructions:

| Relinquished by   | Received by | Date   | Time |
|-------------------|-------------|--------|------|
| S. D. [signature] | [signature] | 2/7/96 | 1540 |

Relinquished by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_  
Received by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Discrepancies Between Samples Labels and COC Record? Y or N \_\_\_\_\_

NOTES:

WESTON Analytics Use Only

Samples were:  
1) Shipped \_\_\_\_\_ or Hand Delivered \_\_\_\_\_  
2) Ambient or Chilled \_\_\_\_\_  
3) Received in \_\_\_\_\_  
4) Labels Indicate \_\_\_\_\_  
5) Received Within Holding Times \_\_\_\_\_

COC Tape was:  
1) Present on Outer Package Y or N \_\_\_\_\_  
2) Unbroken on Outer Package Y or N \_\_\_\_\_  
3) Present on Sample Condition Y or N \_\_\_\_\_  
4) Labels Indicate \_\_\_\_\_  
5) Received Within Holding Times \_\_\_\_\_

WESTON Analytics Use Only  
 96029104

Metal

# Custody Transfer Record/Lab Work Request

| Client                         |           | Refrigerator # |     | Liquid |          | Solid |  | Volume |  | Preservatives |  | ANALYSES REQUESTED |  | Matrix |  | Date Collected |  | Time Collected |  | Matrix Chosen (✓) |  | Client ID/Description |  | Lab ID |  | Matrix Codes: |  |  |
|--------------------------------|-----------|----------------|-----|--------|----------|-------|--|--------|--|---------------|--|--------------------|--|--------|--|----------------|--|----------------|--|-------------------|--|-----------------------|--|--------|--|---------------|--|--|
| COE                            | HOT       | 683            |     |        |          |       |  |        |  |               |  |                    |  |        |  |                |  |                |  |                   |  |                       |  |        |  |               |  |  |
| Est. Final Proj. Sampling Date | 02-28-02  | 02-02-1200     |     |        |          |       |  |        |  |               |  |                    |  |        |  |                |  |                |  |                   |  |                       |  |        |  |               |  |  |
| Work Order #                   | 02281     | 012-02-1200    |     |        |          |       |  |        |  |               |  |                    |  |        |  |                |  |                |  |                   |  |                       |  |        |  |               |  |  |
| Project Contact/Phone          | J. O'Neil | x7201          |     |        |          |       |  |        |  |               |  |                    |  |        |  |                |  |                |  |                   |  |                       |  |        |  |               |  |  |
| AD Project Manager             | K. Baker  |                |     |        |          |       |  |        |  |               |  |                    |  |        |  |                |  |                |  |                   |  |                       |  |        |  |               |  |  |
| QC                             | SPD       | PM             | 200 | AM     | 02/28/02 |       |  |        |  |               |  |                    |  |        |  |                |  |                |  |                   |  |                       |  |        |  |               |  |  |
| Date Rec'd                     |           |                |     |        |          |       |  |        |  |               |  |                    |  |        |  |                |  |                |  |                   |  |                       |  |        |  |               |  |  |
| Account #                      |           |                |     |        |          |       |  |        |  |               |  |                    |  |        |  |                |  |                |  |                   |  |                       |  |        |  |               |  |  |

| FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS |             | DATE/REVISIONS: |             | WESTON Analytics Use Only                                   |                                                 |
|---------------------------------------------|-------------|-----------------|-------------|-------------------------------------------------------------|-------------------------------------------------|
| Special Instructions:                       |             | 1               |             | Samples were:                                               | COC Tape was                                    |
| PTR = Pre-drain Rinse                       |             | 2               |             | 1) Shipped or Hand Delivered                                | 1) Present on Outer Package Y or N              |
|                                             |             | 3               |             | Airbill #                                                   | 2) Unbroken on Outer Package Y or N             |
|                                             |             | 4               |             |                                                             | 3) Present on Sample Condition Y or N           |
|                                             |             | 5               |             |                                                             | 4) Unbroken on Properly Preserved Sample Y or N |
|                                             |             | 6               |             |                                                             | 5) Received Within Holding Times Y or N         |
| Relinquished by                             | Received by | Relinquished by | Received by | Discrepancies Between Samples Labels and COC Record? Y or N |                                                 |
| S.D. Baker                                  | 3/7/02      |                 |             | NOTES:                                                      |                                                 |
|                                             |             |                 |             |                                                             |                                                 |

014

**ESTON**

## **Case Narrative**

RFW BATCH #:

**CLIENT:**

## SAMPLE SIGN-OUT:

| Item/Reason                                       |
|---------------------------------------------------|
| (e.g., "all VOA water,"<br>"001-004, Extraction") |

**Total #  
/Matrix  
(e.g., 4 W)**

## Relinquished By

Received By

Date \_\_\_\_\_

Time

**Total #  
/Matrix  
(e.g., 4 W)**

Relinquished By

Received By

Date \_\_\_\_\_

Time

**Comments**  
(e.g., "volume depleted"  
"kept #002")

## Sample Custody Transfer Record

**LF = Locked Refrigerator**

96026964  
C05 H07920

**RFW BATCH #:**

Page



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
® 610-701-6100 • Fax 610-701-6140

## LIONVILLE LABORATORY ANALYTICAL REPORT

**Client :** COE-HOT GAS  
**RFW# :** 9602L964

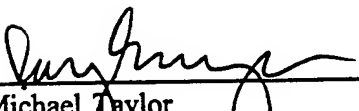
**W.O. #:** 02281-012-012-1200  
**Date Received:** 02-07-96

### SW846 METALS

1. This narrative covers the analyses of 16 air samples.
2. The samples were prepared with Multi Metals method 29 digestion, analyzed in accordance with SW-846 protocol and reported with CLP deliverable.
3. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory and High Purity.
4. All analyses were performed within the required holding times.
5. All Initial and Continuing Calibration Verifications (ICV/CCV's) were within control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.
7. All Preparation/Method Blanks were within method criteria.
8. All ICP Interference Check Standards were within control limits.
9. All Laboratory Control Samples (LCS) were within the laboratory derived control limits.
10. All Mercury matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within the 80-120% control limits. All MSD's were within the 20% Relative Percent Difference (RPD) control limits.
11. The duplicate of sample R1H for Mercury analysis was outside the 20% Relative Percent Difference (RPD) control limits.
12. The code AV currently in use by the laboratory is for the mercury instruments (HG1 & HG2). HG1 & HG2 are complete with autosampler and software, but still require manual digestion.

13. HG1 & HG2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).
14. All sample IDs were changed to accommodate the EPA naming convention which allows a maximum of 6 characters on all CLP Forms. Refer to the Cover Page of the CLP Forms to correlate the modified sample IDs to the RFW#s or refer below to correlate modified IDs to original client IDs:

| <u>Original ID#s</u>               | <u>Modified ID#s</u> |
|------------------------------------|----------------------|
| COE-HG-AFTOUT-MMTL-R1-KMNO4        | R1K                  |
| COE-HG-AFTOUT-MMTL-R1-HCL/H2O      | R1H                  |
| COE-HG-AFTOUT-MMTL-SB-HNO3/H2O     | SBH                  |
| COE-HG-AFTOUT-MMTL-SB-KMNO4        | SBK                  |
| COE-HG-AFTOUT-MMTL-SB-BHHCL        | SBB                  |
| COE-HG-AFTOUT-METALS-R2-BHHNO3/H2O | R2B                  |
| COE-HG-AFTOUT-METALS-R2-KMNO4      | R2K                  |
| COE-HG-AFTOUT-METALS-R2-HCL        | R2H                  |
| COE-HG-AFTOUT-METALS-R3-BHHNO3/HCL | R3B                  |
| COE-HG-AFTOUT-METALS-R3-KMNO4      | R3K                  |
| COE-HG-AFTOUT-METALS-HCL           | R3H                  |
| COE-HG-AFTOUT-PTRA-HNO3            | PTRA                 |
| COMP R1                            | COMP R1              |
| COMP SB                            | COMP SB              |
| COMP R2                            | COMP R2              |
| COMP R3                            | COMP R3              |

  
 J. Michael Taylor  
 Vice President and Laboratory Manager  
 Lionville Analytical Laboratory

2.26.96  
 Date



# METALS METHODS GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this  
 RFW Lot#: 9602664

Leaching Procedure: 1310 1311 1312 Other: \_\_\_\_\_

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3020A 3050A 200.7 SS17  
Other: Multi-Metals Method 29

## Metals Analysis Methods

|             | SW846                    | EPA                       | EPA<br>OSWR | USATHAMA    |
|-------------|--------------------------|---------------------------|-------------|-------------|
| Aluminum    | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |
| Antimony    | <u>6010</u> <u>7041</u>  | <u>200.7</u> <u>204.2</u> |             | <u>99</u>   |
| Arsenic     | <u>6010</u> <u>7060A</u> | <u>200.7</u> <u>206.2</u> |             | <u>99</u>   |
| Barium      | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |
| Beryllium   | <u>6010</u>              | <u>200.7</u>              | <u>1620</u> | <u>99</u>   |
| Bismuth     | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |
| Boron       | <u>6010</u>              | <u>200.7</u> <u>213.2</u> |             | <u>99</u>   |
| Cadmium     | <u>6010</u> <u>7131A</u> | <u>200.7</u>              |             | <u>99</u>   |
| Calcium     | <u>6010</u>              | <u>200.7</u> <u>218.2</u> |             | <u>SS17</u> |
| Chromium    | <u>6010</u> <u>7191</u>  | <u>200.7</u>              |             | <u>99</u>   |
| Cobalt      | <u>6010</u>              | <u>200.7</u> <u>220.2</u> |             | <u>99</u>   |
| Copper      | <u>6010</u> <u>7211</u>  | <u>200.7</u>              |             | <u>99</u>   |
| Iron        | <u>6010</u>              | <u>200.7</u> <u>239.2</u> |             | <u>99</u>   |
| Lead        | <u>6010</u> <u>7421</u>  | <u>200.7</u>              | <u>1620</u> | <u>99</u>   |
| Lithium     | <u>6010</u> <u>7430</u>  | <u>200.7</u>              |             | <u>99</u>   |
| Magnesium   | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |
| Manganese   | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |
| Mercury     | <u>7470</u> <u>7471</u>  | <u>245.1</u> <u>245.5</u> |             | <u>99</u>   |
| Molybdenum  | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |
| Nickel      | <u>6010</u>              | <u>200.7</u> <u>258.1</u> |             | <u>99</u>   |
| Potassium   | <u>6010</u> <u>7610</u>  | <u>200.7</u>              | <u>1620</u> | <u>99</u>   |
| Rare Earths | <u>6010</u>              | <u>200.7</u> <u>270.2</u> |             | <u>99</u>   |
| Selenium    | <u>6010</u> <u>7740</u>  | <u>200.7</u>              | <u>1620</u> | <u>99</u>   |
| Silicon     | <u>6010</u>              | <u>200.7</u>              | <u>1620</u> | <u>99</u>   |
| Silica      | <u>6010</u>              | <u>200.7</u> <u>272.2</u> |             | <u>99</u>   |
| Silver      | <u>6010</u> <u>7761</u>  | <u>200.7</u> <u>273.1</u> |             | <u>99</u>   |
| Sodium      | <u>6010</u> <u>7770</u>  | <u>200.7</u>              |             | <u>99</u>   |
| Strontium   | <u>6010</u>              | <u>200.7</u> <u>279.2</u> |             | <u>99</u>   |
| Thallium    | <u>6010</u> <u>7841</u>  | <u>200.7</u>              |             | <u>99</u>   |
| Tin         | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |
| Titanium    | <u>6010</u>              | <u>200.7</u>              | <u>1620</u> | <u>99</u>   |
| Uranium     | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |
| Vanadium    | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |
| Zinc        | <u>6010</u>              | <u>200.7</u>              | <u>1620</u> | <u>99</u>   |
| Zirconium   | <u>6010</u>              | <u>200.7</u>              |             | <u>99</u>   |

Other: \_\_\_\_\_

Method: \_\_\_\_\_

## **METHOD REFERENCES AND DATA QUALIFIERS**

### **DATA QUALIFIERS**

- U - Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- Indicates that the original sample result is greater than 4x the spike amount added.

### **ABBREVIATIONS**

- MB - Method or preparation blank.
- MS - Matrix Spike.
- MSD - Matrix Spike Duplicate.
- REP - Sample Replicate.
- LCS - Indicates a Laboratory Control Sample.
- NC - Not calculated.

### **ANALYTICAL METAL METHODS**

1. Modified
2. Modified Hg: HgI requires less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for Mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
3. Flame AA

**ESTON**

## **Inorganic Analysis Data Package**

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ROY\_F.\_WESTON\_INC. \_\_\_\_\_ Contract: 2281-12-12  
 Lab Code: WESTON Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: COMPRI  
 SOW No.: SW846

| EPA Sample No. | Lab Sample ID |
|----------------|---------------|
| COMPR1         | 9602L964-023  |
| COMPR2         | 9602L964-025  |
| COMPR3         | 9602L964-026  |
| COMPSB         | 9602L964-024  |
| PTRA           | 9602L964-021  |
| R1H            | 9602L964-005  |
| R1HD           | 9602L964-005D |
| R1HT           | 9602L964-005T |
| R1HS           | 9602L964-005S |
| R1K            | 9602L964-004  |
| R2B            | 9602L964-013  |
| R2BD           | 9602L964-013D |
| R2BT           | 9602L964-013T |
| R2BS           | 9602L964-013S |
| R2H            | 9602L964-015  |
| R2K            | 9602L964-014  |
| R2KD           | 9602L964-014D |
| R2KT           | 9602L964-014T |
| R2KS           | 9602L964-014S |
| R3B            | 9602L964-018  |

Were ICP interelement corrections applied ? Yes/No YES  
 Were ICP background corrections applied ? Yes/No YES  
 If yes - were raw data generated before application of background corrections ? Yes/No NO\_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

COVER PAGE - IN

## COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

[illegible]

**Comments:**

Name: KAY SIKKY  
Title: SECTION MANAGER

021

1  
INORGANIC ANALYSES DATA SHEET

COMPR1

Contract: 2281-12-12

Case No. : \_\_\_\_\_

**SAS No.:**

SDG No.: COMPR1

Lab Sample ID: 9602L964-023

**LOW**

Date Received: 02/07/96

**% Solids:**

0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

FORM I - IN

022

1  
INORGANIC ANALYSES DATA SHEET

**COMPR2**

SDG No.: COMPR1

SAS No.:

Lab Sample ID: 9602L964-025

Lab Sample ID: 9002290  
Date Received: 02/07/96

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

ES<sub>2</sub>.23.94

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

1

INORGANIC ANALYSES DATA SHEET

COMPR3

Lab Name: ROY F. WESTON INC. \_\_\_\_\_ Contract: 2281-12-12 \_\_\_\_\_  
Lab Code: WESTON \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: COMPR1  
Matrix (soil/water): WATER \_\_\_\_\_ Lab Sample ID: 9602L964-026  
Level (low/med): LOW \_\_\_\_\_ Date Received: 02/07/96  
% Solids: \_\_\_\_\_ 0.0 \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

ES  
8-23-96

Color Before: \_\_\_\_\_  
Color After: \_\_\_\_\_

Clarity Before: \_\_\_\_\_  
Clarity After: \_\_\_\_\_

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

FORM I - IN



1  
INORGANIC ANALYSES DATA SHEET

**COMPSB**

Contract: 2281-12-12

**Case No.:** \_\_\_\_\_

**SAS No.:**

SDG No.: COMPR1

Lab Sample ID: 9602L964-024

LOW

Date Received: 02/07/96

0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

1  
INORGANIC ANALYSES DATA SHEET

**PTRA**

Lab Sample ID: 9602L964-021  
Date Received: 02/07/96

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

FORM I - IN

1  
INORGANIC ANALYSES DATA SHEET

R1H

Lab Name: ROY F. WESTON INC. \_\_\_\_\_  
 Lab Code: WESTON Case No.: \_\_\_\_\_  
 Matrix (soil/water): WATER  
 Level (low/med): LOW  
 % Solids: 0.0

**SAS No.:**

SDG No.: COMPR1

Lab Sample ID: 9602L964-005  
Date Received: 02/07/96

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

Color Before: \_\_\_\_\_  
Color After: \_\_\_\_\_

Clarity Before: \_\_\_\_\_  
Clarity After: \_\_\_\_\_

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

FORM I - IN

027

1

INORGANIC ANALYSES DATA SHEET

R1K

SDG No.: COMPR1

**SAS No. :**

Lab Sample ID: 9602L964-004

Lab Sample ID: 98022501  
Date Received: 02/07/96

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

1  
INORGANIC ANALYSES DATA SHEET

**R2B**

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

FORM I - IN

029

1

INORGANIC ANALYSES DATA SHEET

**R2H**

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

ES  
2.28.96

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

1  
INORGANIC ANALYSES DATA SHEET

**R2K**

SDG No.: COMPR1

**SAS No. :**

Lab Sample ID: 9602L964-014

Date Received: 02/07/96

Level (low/med): \_\_\_\_\_  
% Solids: \_\_\_\_\_ 0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

ES  
A.23-94

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

1  
INORGANIC ANALYSES DATA SHEET

**R3B**

0.0

[illegible]

**FORM I - IN**



1  
INORGANIC ANALYSES DATA SHEET

R3H

SDG No.: COMPR1

**SAS No.:**

Lab Sample ID: 9602L964-020

Lab Sample ID: 98022504  
Date Received: 02/07/96

Level (low/med): \_\_\_\_\_  
% Solids: \_\_\_\_\_ 0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

1

INORGANIC ANALYSES DATA SHEET

**R3K**

Lab Name: ROY F. WESTON INC. \_\_\_\_\_ Contract: 2281-12-12 \_\_\_\_\_  
Lab Code: WESTON \_\_\_\_\_ Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: COMPR1  
Matrix (soil/water): WATER \_\_\_\_\_ Lab Sample ID: 9602L964-019  
Level (low/med): LOW \_\_\_\_\_ Date Received: 02/07/96  
% Solids: \_\_\_\_\_ 0.0 \_\_\_\_\_

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

Color Before: \_\_\_\_\_  
Color After: \_\_\_\_\_

Clarity Before: \_\_\_\_\_  
Clarity After: \_\_\_\_\_

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

**FORM I - IN**

1  
INORGANIC ANALYSES DATA SHEET

**SBB**

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]**Comments:**

035

1  
INORGANIC ANALYSES DATA SHEET

**SBH**

SDG No.: COMPRI

Lab Sample ID: 9602L964-008

Lab Sample ID: 98022501  
Date Received: 02/07/96

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

**FORM I - IN**

1

INORGANIC ANALYSES DATA SHEET

**SBK**

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

ES  
2.23.96

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

**Comments:**

## 2A

Lab Name: ROY\_F.\_WESTON\_INC.\_\_\_\_\_

**Contract: 2281-12-12**

Lab Code: WESTON

Case No. : \_\_\_\_\_

SAS No. : \_\_\_\_\_

SDG No.: COMPR1

Initial Calibration Source: IV\_\_\_\_\_

Continuing Calibration Source: IV\_\_\_\_\_

Concentration Units: ug/L

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

038

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

2A  
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Code: WESTON Case No.: SAS No.: SDG No.: COMPR1

Continuing Calibration Source: IV\_\_\_\_\_

Concentration Units: ug/L

[illegible]

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

2B  
CRDL STANDARD FOR AA AND ICP

ICP CRDL Standard Source: HIGH PURITY\_

[illegible]



2B  
CRDL STANDARD FOR AA AND ICP

CRDL STANDARD FOR AA AND ICP

ICP CRDL Standard Source: HIGH PURITY\_

[illegible]

041

3  
BLANKS

Preparation Blank Concentration Units (ug/L or mg/kg): UG\_\_\_\_\_

FORM III - IN

3  
BLANKS

Preparation Blank Concentration Units (ug/L or mg/kg): \_\_\_\_\_

[illegible]

043



5A  
SPIKE SAMPLE RECOVERY

Lab Name: ROY\_F.\_WESTON\_INC.\_\_\_\_\_

Contract:2281-12-12

R1HS

Lab Code: WESTON

**Case No. :** \_\_\_\_\_

**SAS No.:**

SDG No.: COMPR1

Matrix:      WATER

Level (low/med): LOW

Matrix: WATER  
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_

[illegible]

**Comments:**

FORM V (Part 1) - IN

045

5A  
SPIKE SAMPLE RECOVERY

Lab Name: ROY\_F.\_WESTON\_INC.\_\_\_\_\_

**Contract:2281-12-12**

**RIGHT**

Lab Code: WESTON

**Case No.:** \_\_\_\_\_

**SAS No.:**

SDG No.: COMPR1

Matrix: WATER

Level (low/med): LOW

Matrix: WATER  
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

**Comments:**

FORM V (Part 1) - IN

5A  
SPIKE SAMPLE RECOVERY

Lab Name: ROY\_F.\_WESTON\_INC.\_\_\_\_\_

**Contract:2281-12-12**

**R2BS**

**Lab Code: WESTON**

Case No. : \_\_\_\_\_

**SAS No.:**

SDG No.: COMPR1

Matrix: WATER

Level (low/med): LOW

Matrix: WATER  
% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

**Comments:**

FORM V (Part 1) - IN

645





5A  
SPIKE SAMPLE RECOVERY

Lab Name: ROY\_F.\_WESTON\_INC.\_\_\_\_\_

Contract:2281-12-12

**R2KS**

Lab Code: WESTON      Case No.: \_\_\_\_\_

**SAS No.:**

SDG No.: COMPR1

Matrix: WATER  
% Solids for Sample: 0.0

Level (low/med): LOW

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

**Comments:**

043



6  
DUPLICATES

R1HD

% Solids for Duplicate:     0.0

Concentration Units (ug/L or mg/kg dry weight): UG\_\_

[illegible]

FORM VI - IN

051

6  
DUPLICATES

R2BD

Concentration Units (ug/L or mg/kg dry weight): UG\_\_\_\_\_

[illegible]

FORM VI - IN

052

6  
DUPLICATES

R2KD

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

[illegible]

LABORATORY <sup>7</sup> CONTROL SAMPLE

7

Contract: 2281-12-12

**Case No. :** \_\_\_\_\_

**SAS No.:** \_\_\_\_\_

SDG No.: COMPR1

Solid LCS Source: \_\_\_\_\_

Aqueous LCS Source: IV\_\_\_\_\_

[illegible]

7  
LABORATORY CONTROL SAMPLE

Aqueous LCS Source: IV\_\_\_\_\_

FORM VII - IN

## 7

## Lab Name: ROY\_F.\_WESTON\_INC.\_\_\_\_\_

**Contract: 2281-12-12**

**Lab Code: WESTON**

**Case No. :** \_\_\_\_\_

**SAS No.:** \_\_\_\_\_

SDG No.: COMPR1

**Solid LCS Source:** \_\_\_\_\_

Aqueous LCS Source: IV\_\_\_\_\_

FORM VII - IN

050



7  
LABORATORY CONTROL SAMPLE

**Contract: 2281-12-12**

**Case No. :** \_\_\_\_\_

SAS No. : \_\_\_\_\_

SDG No.: COMPR1

Solid LCS Source: \_\_\_\_\_

Aqueous LCS Source: IV\_\_\_\_\_

[illegible]

057



**U.S. EPA - CLP**

10

10

Instrument Detection Limits (Quarterly)

Lab Name: ROY\_F.WESTON\_INC. \_\_\_\_\_  
Lab Code: WESTON Case No.: \_\_\_\_\_  
ICP ID Number: IC3 \_\_\_\_\_  
Flame AA ID Number : \_\_\_\_\_  
Furnace AA ID Number : \_\_\_\_\_

Contract: 2281-12-12  
SAS No.:  
Date: 01/01/96

SDG No.: COMPR1

[illegible]

**Comments:**

FORM X - IN

059

U.S. EPA - CLP

10

10

Instrument Detection Limits (Quarterly)

Lab Name: ROY F. WESTON INC. \_\_\_\_\_  
Lab Code: WESTON Case No.: \_\_\_\_\_  
ICP ID Number: \_\_\_\_\_  
Flame AA ID Number : HG2 \_\_\_\_\_  
Furnace AA ID Number : \_\_\_\_\_

Contract: 2281-12-12  
SAS No.:  
Date: 01/01/96

SDG No.: COMPR1

[illegible]

**Comments:**

**FORM X - IN**

066

11A

ICP Interelement Correction Factors (Annually)

ICP ID Number: IC3\_\_\_\_\_ Date: 07/01/95

**Comments:**

062

11B

ICP Interelement Correction Factors (Annually)

ICP ID Number: IC3\_\_\_\_\_ Date: 07/01/95

**Comments:**

C62

12  
ICP Linear Ranges (Quarterly)

Date: 01/01/96

**Comments:**

063

13  
PREPARATION LOG

Method: P\_

[illegible]

064



## U.S. EPA - CLP

13  
PREPARATION LOG

Lab Name: ROY\_F.\_WESTON\_INC. \_\_\_\_\_

Contract: 2281-12-12

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: COMPRI

Method: AV

| EPA<br>Sample<br>No. | Preparation<br>Date | Weight<br>(gram) | Volume<br>(mL) |
|----------------------|---------------------|------------------|----------------|
| COMPRI               | 02/19/96            |                  | 33             |
| COMPRI2              | 02/19/96            |                  | 33             |
| COMPRI3              | 02/19/96            |                  | 33             |
| COMPRI3B             | 02/19/96            |                  | 33             |
| LCSW195              | 02/19/96            |                  | 33             |
| LCSW295              | 02/19/96            |                  | 33             |
| PBW195               | 02/19/96            |                  | 33             |
| PTRA                 | 02/19/96            |                  | 33             |
| R1H                  | 02/19/96            |                  | 33             |
| R1HD                 | 02/19/96            |                  | 33             |
| R1HS                 | 02/19/96            |                  | 33             |
| R1HT                 | 02/19/96            |                  | 33             |
| R1K                  | 02/19/96            |                  | 33             |
| R2B                  | 02/19/96            |                  | 33             |
| R2BD                 | 02/19/96            |                  | 33             |
| R2BS                 | 02/19/96            |                  | 33             |
| R2BT                 | 02/19/96            |                  | 33             |
| R2H                  | 02/19/96            |                  | 33             |
| R2K                  | 02/19/96            |                  | 33             |
| R2KD                 | 02/19/96            |                  | 33             |
| R2KS                 | 02/19/96            |                  | 33             |
| R2KT                 | 02/19/96            |                  | 33             |
| R3B                  | 02/19/96            |                  | 33             |
| R3H                  | 02/19/96            |                  | 33             |
| R3K                  | 02/19/96            |                  | 33             |
| SBB                  | 02/19/96            |                  | 33             |
| SBH                  | 02/19/96            |                  | 33             |
| SBK                  | 02/19/96            |                  | 33             |
|                      |                     |                  |                |
|                      |                     |                  |                |
|                      |                     |                  |                |
|                      |                     |                  |                |
|                      |                     |                  |                |

FORM XIII - IN

065

14  
ANALYSIS RUN LOG

**Contract: 2281-12-12**

SAS No.: \_\_\_\_\_ SDG No.: COMPR1

**Method:** P\_

End Date: 02/19/96

[illegible]

14  
ANALYSIS RUN LOG

End Date: 02/20/96

FORM XIV - IN

## U.S. EPA - CLP

14  
ANALYSIS RUN LOG

Lab Name: ROY\_F.\_WESTON\_INC. \_\_\_\_\_

Contract: 2281-12-12

Lab Code: WESTON Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: COMPRI

Instrument ID Number: HG2 \_\_\_\_\_

Method: AV

Start Date: 02/19/96

End Date: 02/19/96

| EPA<br>Sample<br>No. | D/F   | Time | % R | Analytes |        |        |        |        |        |        |        |        |        |        |        |   |   |   |   |
|----------------------|-------|------|-----|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|---|---|---|
|                      |       |      |     | S<br>B   | A<br>S | B<br>A | B<br>E | C<br>D | C<br>R | P<br>B | H<br>G | N<br>I | S<br>E | A<br>G | T<br>L |   |   |   |   |
| S0                   | 1.00  | 1531 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| S0.5                 | 1.00  | 1534 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| S1                   | 1.00  | 1536 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| S2                   | 1.00  | 1539 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| S5                   | 1.00  | 1542 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| S10                  | 1.00  | 1545 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| ICV                  | 1.00  | 1548 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| ICB                  | 1.00  | 1551 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| CCV                  | 1.00  | 1554 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| CCB                  | 1.00  | 1556 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| CRA                  | 1.00  | 1559 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| PBW195               | 1.00  | 1602 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| LCSW195              | 1.00  | 1605 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| LCSW295              | 1.00  | 1607 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R1K                  | 3.00  | 1610 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R1H                  | 1.00  | 1613 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R1HD                 | 1.00  | 1616 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R1HS                 | 1.00  | 1618 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R1HT                 | 1.00  | 1621 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| SBH                  | 10.00 | 1624 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| CCV                  | 1.00  | 1627 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| CCB                  | 1.00  | 1630 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| SBK                  | 3.00  | 1632 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| SBB                  | 1.00  | 1635 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R2B                  | 10.00 | 1638 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R2BD                 | 10.00 | 1641 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R2BS                 | 10.00 | 1643 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R2BT                 | 10.00 | 1646 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R2K                  | 3.00  | 1649 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R2KD                 | 3.00  | 1652 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R2KS                 | 3.00  | 1654 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |
| R2KT                 | 3.00  | 1657 |     | -        | -      | -      | -      | -      | -      | -      | X      | -      | -      | -      | -      | - | - | - | - |

FORM XIV - IN

063





**STON**



## **Raw Data**

**ESTON**

## **Metals by ICP**

Method: COE

Standard: S0

| Elem | Ag3280 | Al3082 | As1936 | Ba4934 | Be3130 | Cd2288 | Cr2677 |
|------|--------|--------|--------|--------|--------|--------|--------|
| Avge | .0200  | .0513  | .0300  | .0047  | .0947  | .0027  | .0173  |
| SDev | .0144  | .0372  | .0275  | .0050  | .0042  | .0061  | .0145  |
| %RSD | 72.11  | 72.40  | 91.65  | 107.9  | 4.917  | 229.1  | 83.47  |

|    |       |       |       |       |       |        |       |
|----|-------|-------|-------|-------|-------|--------|-------|
| #1 | .0240 | .0340 | .0540 | .0040 | .0380 | -.0040 | .0100 |
| #2 | .0040 | .0260 | .0000 | .0000 | .0860 | .0040  | .0340 |
| #3 | .0320 | .0940 | .0360 | .0100 | .0800 | .0080  | .0080 |

| Elem | Fe2599 | Ni2316 | Pb2203 | Sb2068 | Se1960 | Tl1908 | V-2924 |
|------|--------|--------|--------|--------|--------|--------|--------|
| Avge | .0167  | .0407  | .0240  | .0260  | -.0087 | -.0087 | -.0060 |
| SDev | .0220  | .0767  | .0191  | .0561  | .0314  | .0248  | .0171  |
| %RSD | 132.2  | 188.7  | 79.49  | 215.8  | 362.2  | 236.7  | 284.8  |

|    |        |        |       |        |        |        |        |
|----|--------|--------|-------|--------|--------|--------|--------|
| #1 | -.0060 | .1000  | .0020 | .0800  | -.0440 | -.0240 | -.0240 |
| #2 | .0380  | .0680  | .0360 | .0300  | .0020  | .0200  | -.0040 |
| #3 | .0180  | -.0460 | .0340 | -.0320 | .0160  | -.0220 | .0100  |

| Elem | Zn2138 |
|------|--------|
| Avge | .0093  |
| SDev | .0129  |
| %RSD | 137.8  |

|    |       |
|----|-------|
| #1 | .0000 |
| #2 | .0040 |
| #3 | .0240 |

COE-MOT  
CAS  
SW846

No Return

1 COPY

metraved  
updated  
ATP 10/96

P50219B IC3.2

96L0322-MB1  
-24  
-22  
9602L964-008  
-013  
-018  
-021  
-025  
-026



Method: COE

Standard: S1A

|      |        |        |        |        |        |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|
| Elem | Ag3280 | Al3092 | Ba4934 | Be3130 | Cd2288 | Cr2677 | Fe2599 |
| Avg  | .9207  | 3.291  | 23.93  | 15.41  | .5167  | 2.503  | 37.33  |
| SD   | .0162  | .023   | .15    | .09    | .0136  | .016   | .24    |
| %RSD | 1.756  | .7123  | .6203  | .5933  | 2.635  | .6408  | .6319  |
| #1   | .9060  | 3.264  | 24.01  | 15.46  | .5320  | 2.502  | 37.45  |
| #2   | .9180  | 3.300  | 24.03  | 15.47  | .5120  | 2.520  | 37.48  |
| #3   | .9380  | 3.308  | 23.76  | 15.30  | .5060  | 2.483  | 37.06  |
| Elem | Ni2316 | Pb2203 | Sb2068 | V-2924 | Zn2138 |        |        |
| Avg  | 14.99  | 2.850  | 10.26  | 10.79  | 5.062  |        |        |
| SD   | .05    | .042   | .11    | .04    | .026   |        |        |
| %RSD | .3202  | 1.474  | 1.117  | .3552  | .5167  |        |        |
| #1   | 14.94  | 2.880  | 10.16  | 10.81  | 5.080  |        |        |
| #2   | 14.99  | 2.802  | 10.23  | 10.81  | 5.074  |        |        |
| #3   | 15.04  | 2.868  | 10.39  | 10.74  | 5.032  |        |        |

Method: COE

Standard: S1B

|      |        |        |        |        |        |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|
| Elem | Ag3280 | Al3082 | Ba4934 | Be3130 | Cd2286 | Cr2677 | Fe2599 |
| Avge | 1.809  | 6.599  | 49.91  | 31.34  | 1.069  | 5.056  | 75.29  |
| SDev | .014   | .058   | .64    | .27    | .026   | .052   | .64    |
| %RSD | .7842  | .8755  | 1.313  | .8474  | 2.441  | 1.031  | .8493  |
| #1   | 1.812  | 6.630  | 49.26  | 31.51  | 1.072  | 5.106  | 75.68  |
| #2   | 1.794  | 6.532  | 48.16  | 31.03  | 1.042  | 5.002  | 74.55  |
| #3   | 1.822  | 6.634  | 49.29  | 31.47  | 1.094  | 5.060  | 75.64  |
| Elem | Ni2316 | Pb2203 | Sb2068 | V-2924 | Zn2138 |        |        |
| Avge | 30.07  | 5.753  | 20.76  | 21.91  | 10.25  |        |        |
| SDev | .17    | .050   | .20    | .20    | .07    |        |        |
| %RSD | .5521  | .8728  | .9403  | .8940  | .6882  |        |        |
| #1   | 30.19  | 5.766  | 20.97  | 22.03  | 10.29  |        |        |
| #2   | 29.88  | 5.698  | 20.59  | 21.68  | 10.17  |        |        |
| #3   | 30.14  | 5.796  | 20.73  | 22.01  | 10.30  |        |        |

Method: COE

Standard: S1

|      |        |        |        |        |        |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|
| Elem | Ag3280 | Al3082 | Ba4934 | Be3130 | Cd2286 | Cr2677 | Fe2589 |
| Avge | 3.585  | 13.18  | 97.26  | 62.32  | 2.091  | 9.903  | 148.0  |
| SDev | .025   | .1     | .43    | .29    | .001   | .057   | .6     |
| %RSD | .6931  | .7350  | .4432  | .4646  | .0552  | .5774  | .3785  |

|    |       |       |       |       |       |       |       |
|----|-------|-------|-------|-------|-------|-------|-------|
| #1 | 3.600 | 13.24 | 97.40 | 62.42 | 2.090 | 9.952 | 148.3 |
| #2 | 3.598 | 13.22 | 97.60 | 62.54 | 2.092 | 9.916 | 148.4 |
| #3 | 3.556 | 13.06 | 96.77 | 61.99 | 2.092 | 9.840 | 147.4 |

|      |        |        |        |        |        |
|------|--------|--------|--------|--------|--------|
| Elem | Ni2316 | Pb2203 | Sb2068 | V-2924 | Zn2138 |
| Avge | 59.02  | 11.26  | 41.13  | 43.36  | 20.27  |
| SDev | .31    | .12    | .18    | .18    | .08    |
| %RSD | .5258  | 1.051  | .4481  | .4132  | .4133  |

|    |       |       |       |       |       |
|----|-------|-------|-------|-------|-------|
| #1 | 59.25 | 11.36 | 41.22 | 43.47 | 20.29 |
| #2 | 59.14 | 11.30 | 41.25 | 43.45 | 20.34 |
| #3 | 58.67 | 11.13 | 40.92 | 43.15 | 20.17 |

Method: COE

Standard: S2A

| Elem | As1936 | Se1960 | Tl1909 |
|------|--------|--------|--------|
| Avge | 13.43  | 14.49  | 18.19  |
| SDev | .15    | .21    | .28    |
| %RSD | 1.092  | 1.474  | 1.554  |

|    |       |       |       |
|----|-------|-------|-------|
| #1 | 13.42 | 14.62 | 18.17 |
| #2 | 13.29 | 14.24 | 17.92 |
| #3 | 13.59 | 14.61 | 18.49 |

Method: COE

Standard: S2P

|      |        |        |        |
|------|--------|--------|--------|
| Elem | As1936 | Se1960 | Tl1906 |
| Avge | 26.41  | 28.53  | 35.91  |
| SDev | .15    | .26    | .35    |
| SRSD | .5575  | .9661  | .9756  |

|    |       |       |       |
|----|-------|-------|-------|
| #1 | 26.32 | 28.42 | 36.31 |
| #2 | 26.32 | 28.45 | 35.75 |
| #3 | 26.58 | 28.91 | 35.67 |

Method: COE

Standard: S2

|      |        |        |        |
|------|--------|--------|--------|
| Elem | As1938 | Se1950 | Tl1908 |
| Avg  | 53.08  | 57.32  | 72.15  |
| SDev | .40    | .36    | .47    |
| %RSD | .7567  | .6210  | .6449  |

|    |       |       |       |
|----|-------|-------|-------|
| #1 | 52.63 | 56.92 | 71.61 |
| #2 | 53.19 | 57.48 | 72.36 |
| #3 | 53.41 | 57.58 | 72.47 |

Method: CCE

Slope = Conc(SIR)/IR

| Element | Wavelength | High std | Low std   | Slope   | Y-intercept | Date     | Standardize |
|---------|------------|----------|-----------|---------|-------------|----------|-------------|
| Ag3280  | 328.069    | Multiple | Standards | 272.957 | -5.58934    | 02/19/96 | 02:29:13    |
| Al3082  | 308.215    | Multiple | Standards | 754.082 | -38.5836    | 02/19/96 | 02:29:13    |
| As1936  | 193.696    | Multiple | Standards | 376.400 | -11.5346    | 02/19/96 | 02:35:36    |
| Ba4934  | 493.409    | Multiple | Standards | 103.169 | -.305465    | 02/19/96 | 02:29:13    |
| Be3130  | 313.042    | Multiple | Standards | 8.29323 | -.693637    | 02/19/96 | 02:29:13    |
| Ca2268  | 228.802    | Multiple | Standards | 238.918 | -.620792    | 02/19/96 | 02:29:13    |
| Cr2677  | 267.716    | Multiple | Standards | 100.313 | -1.74086    | 02/19/96 | 02:29:13    |
| Fe2599  | 259.940    | Multiple | Standards | 66.9932 | -1.16682    | 02/19/96 | 02:29:13    |
| Mn2316  | 231.604    | Multiple | Standards | 67.0980 | -2.77140    | 02/19/96 | 02:29:13    |
| Pb2203  | 220.353    | Multiple | Standards | 442.299 | -10.6247    | 02/19/96 | 02:29:13    |
| Sb2068  | 206.332    | Multiple | Standards | 144.568 | -3.72224    | 02/19/96 | 02:29:13    |
| Se1960  | 196.026    | Multiple | Standards | 347.766 | 2.76479     | 02/19/96 | 02:35:36    |
| Tl1908  | 190.864    | Multiple | Standards | 276.756 | 2.19105     | 02/19/96 | 02:35:36    |
| V-2924  | 292.402    | Multiple | Standards | 115.076 | .723687     | 02/19/96 | 02:29:13    |
| Zn2138  | 213.856    | Multiple | Standards | 99.2776 | -.917049    | 02/19/96 | 02:29:13    |

Method: GCE

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Ag3290  | 329.063    | S0       | .000000             | -.010199               | .010199                |
|         |            | S1A      | 250.000             | 251.237                | -1.23703               |
|         |            | S1B      | 500.000             | 499.137                | .863251                |
|         |            | S1       | 1000.00             | 994.378                | 5.62170                |
|         |            |          |                     |                        |                        |

CorCoef: 1.0000 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Al3082  | 308.215    | S0       | .000000             | .125942                | -.125942               |
|         |            | S1A      | 2500.00             | 2442.85                | 57.1511                |
|         |            | S1B      | 5000.00             | 4937.35                | 62.6475                |
|         |            | S1       | 10000.0             | 9896.70                | 103.302                |
|         |            |          |                     |                        |                        |

CorCoef: 0.99999 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| As1936  | 193.696    | S0       | .000000             | -.242593               | .242593                |
|         |            | S2A      | 5000.00             | 5044.27                | -44.2725               |
|         |            | S2B      | 10000.0             | 9928.44                | 71.5596                |
|         |            | S2       | 20000.0             | 19966.0                | 33.9707                |
|         |            |          |                     |                        |                        |

CorCoef: 0.99999 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Ba4934  | 493.409    | S0       | .000000             | .175991                | -.175991               |
|         |            | S1A      | 2500.00             | 2469.00                | 30.9976                |
|         |            | S1B      | 5000.00             | 5045.19                | -45.1929               |
|         |            | S1       | 10000.0             | 10033.6                | -33.6045               |
|         |            |          |                     |                        |                        |

CorCoef: 0.99998 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Be3130  | 313.042    | S0       | .000000             | .008524                | -.008524               |
|         |            | S1A      | 125.000             | 127.100                | -2.09958               |
|         |            | S1B      | 250.000             | 259.183                | -9.18317               |
|         |            | S1       | 500.000             | 516.135                | -16.1352               |
|         |            |          |                     |                        |                        |

CorCoef: 0.99998 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Cd2288  | 228.802    | S0       | .000000             | .010323                | -.010323               |
|         |            | S1A      | 125.000             | 122.814                | 2.18578                |
|         |            | S1B      | 250.000             | 254.856                | -4.85626               |
|         |            | S1       | 500.000             | 499.031                | .969421                |
|         |            |          |                     |                        |                        |

CorCoef: 0.99990 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Cr2677  | 267.716    | S0       | .000000             | -.002112               | .002112                |
|         |            | S1A      | 250.000             | 249.375                | .625046                |
|         |            | S1B      | 500.000             | 505.439                | -5.43948               |
|         |            | S1       | 1000.00             | 991.621                | 8.37885                |
|         |            |          |                     |                        |                        |

CorCoef: 0.99994 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Fe2599  | 259.940    | S0       | .000000             | -.050265               | .050265                |
|         |            | S1A      | 2500.00             | 2499.55                | .445313                |
|         |            | S1B      | 5000.00             | 5042.88                | -42.8843               |
|         |            | S1       | 10000.0             | 9916.01                | 83.9863                |
|         |            |          |                     |                        |                        |

CorCoef: 0.99995 ✓



| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Ni3316  | 231.604    | S0       | .000000             | -.042744               | .042744                |
|         |            | S1A      | 1000.00             | 1003.21                | -3.20067               |
|         |            | S1B      | 2000.00             | 2014.96                | -14.9551               |
|         |            | S1       | 4000.00             | 3957.26                | 42.7366                |

CorCoef: 0.99995 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Pb2203  | 220.353    | S0       | .000000             | -.009556               | .009556                |
|         |            | S1A      | 1250.00             | 1249.93                | .071167                |
|         |            | S1B      | 2500.00             | 2534.07                | -34.0715               |
|         |            | S1       | 5000.00             | 4971.14                | 28.8584                |

CorCoef: 0.99994 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Sb2068  | 206.838    | S0       | .000000             | .036517                | -.036517               |
|         |            | S1A      | 1500.00             | 1479.54                | 20.4578                |
|         |            | S1B      | 3000.00             | 2997.79                | 2.20776                |
|         |            | S1       | 6000.00             | 5942.64                | 57.3643                |

CorCoef: 0.99998 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Se1960  | 196.026    | S0       | .000000             | -.249182               | .249182                |
|         |            | S2A      | 5000.00             | 5042.13                | -42.1304               |
|         |            | S2B      | 10000.0             | 9946.56                | 53.4375                |
|         |            | S2       | 20000.0             | 19938.4                | 61.6465                |

CorCoef: 0.99999 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Tl1908  | 190.864    | S0       | .000000             | -.207502               | .207502                |
|         |            | S2A      | 5000.00             | 5037.68                | -37.6753               |
|         |            | S2B      | 10000.0             | 9939.95                | 60.0527                |
|         |            | S2       | 20000.0             | 19969.4                | 30.5996                |

CorCoef: 0.99999 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| V-2924  | 292.402    | S0       | .000000             | .033434                | -.033434               |
|         |            | S1A      | 1250.00             | 1242.16                | 7.84106                |
|         |            | S1B      | 2500.00             | 2521.80                | -21.7991               |
|         |            | S1       | 5000.00             | 4990.02                | 9.98389                |

CorCoef: 0.99998 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Zn2138  | 213.856    | S0       | .000000             | .009542                | -.009542               |
|         |            | S1A      | 500.000             | 501.626                | -1.62607               |
|         |            | S1B      | 1000.00             | 1016.81                | -16.8106               |
|         |            | S1       | 2000.00             | 2011.17                | -11.1749               |

CorCoef: 0.99998 ✓

## Analysis Report

QC Standard

Mon 02-19-96 02:41:29 PM

page 1

Method: COE

Sample Name: STD1 ✓

Operator: PMP

Run Time: 02/19/96 14:39:14

Comment:

Model: CCNC Corr. Factor: 1

| Elem  | Ag3280 | Al3082 | As1936 | Ba4934 | Be3130 | Cd2288 | Cr2677 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 968.4  | 9933.  | -15.83 | 9766.  | 477.5  | 495.9  | 973.0  |
| SDev  | 5.5    | 24.    | 7.33   | 41.    | .3     | 3.8    | 1.6    |
| %RSD  | .5680  | .2383  | 46.17  | .4167  | .0562  | .7577  | .1667  |

|    |       |       |        |       |       |       |       |
|----|-------|-------|--------|-------|-------|-------|-------|
| #1 | 966.7 | 9927. | -16.99 | 9720. | 477.3 | 495.2 | 973.9 |
| #2 | 963.9 | 9913. | -8.055 | 9783. | 477.5 | 492.6 | 973.9 |
| #3 | 974.6 | 9959. | -22.59 | 9796. | 477.3 | 500.0 | 971.1 |

|        |           |           |         |           |           |           |           |
|--------|-----------|-----------|---------|-----------|-----------|-----------|-----------|
| Errors | QC Pass ✓ | QC Pass ✓ | NOCHECK | QC Pass ✓ | QC Pass ✓ | QC Pass ✓ | QC Pass ✓ |
| Value  | 1000.     | 10000.    |         | 10000.    | 500.0     | 500.0     | 1000.     |
| Range  | 5.000     | 5.000     |         | 5.000     | 5.000     | 5.000     | 5.000     |

| Elem  | Fe2599 | Ni2316 | Pb2203 | Sb2068 | Se1960 | Tl1908 | V-2924 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 9734.  | 3891.  | 4891.  | 5893.  | 6.223  | 15.13  | 4888.  |
| SDev  | 19.    | 17.    | 12.    | 31.    | 10.07  | 22.20  | 7.     |
| %RSD  | .1993  | .4485  | .2430  | .5322  | 161.8  | 146.7  | .1345  |

|    |       |       |       |       |        |       |       |
|----|-------|-------|-------|-------|--------|-------|-------|
| #1 | 9716. | 3911. | 4891. | 5929. | 1.118  | 3.178 | 4881. |
| #2 | 9733. | 3878. | 4879. | 5876. | -.2690 | 1.477 | 4890. |
| #3 | 9754. | 3885. | 4902. | 5874. | 17.82  | 40.74 | 4894. |

|        |           |           |           |           |         |         |           |
|--------|-----------|-----------|-----------|-----------|---------|---------|-----------|
| Errors | QC Pass ✓ | QC Pass ✓ | QC Pass ✓ | QC Pass ✓ | NOCHECK | NOCHECK | QC Pass ✓ |
| Value  | 10000.    | 4000.     | 5000.     | 6000.     |         |         | 5000.     |
| Range  | 5.000     | 5.000     | 5.000     | 5.000     |         |         | 5.000     |

| Elem  | Zn2138 |
|-------|--------|
| Units | ppb    |
| Avg   | 1942.  |
| SDev  | 2.     |
| %RSD  | .1193  |

|    |       |
|----|-------|
| #1 | 1943. |
| #2 | 1939. |
| #3 | 1944. |

|        |           |
|--------|-----------|
| Errors | QC Pass ✓ |
| Value  | 2000.     |
| Range  | 5.000     |

## Analysis Report

QC Standard

Mon 02-19-96 02:45:01 PM

page 1

Method: COE

Sample Name: STD2 ✓

Operator: FMP

Run Time: 02/19/96 14:42:46

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |           |         |           |           |         |
|--------|---------|---------|-----------|---------|-----------|-----------|---------|
| Elem   | Ag3230  | Al3082  | As1936    | Ba4934  | Be3130    | Ca2238    | Cr2677  |
| Units  | ppb     | ppb     | ppb       | ppb     | ppb       | ppb       | ppb     |
| Avge   | 2.409   | 426.6   | 19600.    | .8633   | .0378     | 1.576     | -7.760  |
| SDev   | 1.961   | 7.1     | 154.      | 1.136   | .1297     | 7.158     | 2.844   |
| %RSD   | 81.38   | 1.656   | .7867     | 131.6   | 147.7     | 454.3     | 36.66   |
| #1     | 2.223   | 418.9   | 19530.    | -.3055  | .1509     | -2.367    | -8.763  |
| #2     | 4.457   | 432.8   | 19490.    | 1.964   | .1739     | 9.838     | -4.550  |
| #3     | .5482   | 428.1   | 19770.    | .9326   | -.0614    | -2.744    | -9.966  |
| Errors | NOCHECK | NOCHECK | QC Pass ✓ | NOCHECK | NOCHECK   | NOCHECK   | NOCHECK |
| Value  |         |         | 20000.    |         |           |           |         |
| Range  |         |         | 5.000     |         |           |           |         |
| Elem   | Fe2599  | Ni2316  | Pb2203    | Sb2068  | Se1960    | Tl1908    | V-2924  |
| Units  | ppb     | ppb     | ppb       | ppb     | ppb       | ppb       | ppb     |
| Avge   | 1.156   | 5.415   | -6.152    | 97.92   | 19580.    | 19780.    | 6.016   |
| SDev   | .507    | 3.298   | 10.038    | 29.01   | 218.      | 95.       | 1.659   |
| %RSD   | 43.90   | 60.91   | 163.2     | 29.63   | 1.116     | .4782     | 27.58   |
| #1     | 1.513   | 2.999   | 2.093     | 88.00   | 19400.    | 19700.    | 4.636   |
| #2     | 1.379   | 4.073   | -3.219    | 130.6   | 19500.    | 19740.    | 7.857   |
| #3     | .5750   | 9.172   | -17.33    | 75.17   | 19820.    | 19880.    | 5.556   |
| Errors | NOCHECK | NOCHECK | NOCHECK   | NOCHECK | QC Pass ✓ | QC Pass ✓ | NOCHECK |
| Value  |         |         |           |         | 20000.    | 20000.    |         |
| Range  |         |         |           |         | 5.000     | 5.000     |         |
| Elem   | Zn2138  |         |           |         |           |           |         |
| Units  | ppb     |         |           |         |           |           |         |
| Avge   | -1.062  |         |           |         |           |           |         |
| SDev   | .821    |         |           |         |           |           |         |
| %RSD   | 77.33   |         |           |         |           |           |         |
| #1     | -1.709  |         |           |         |           |           |         |
| #2     | -.1381  |         |           |         |           |           |         |
| #3     | -1.339  |         |           |         |           |           |         |
| Errors | NOCHECK |         |           |         |           |           |         |
| Value  |         |         |           |         |           |           |         |
| Range  |         |         |           |         |           |           |         |

## Analysis Report

Blank Sample

Mon 02-19-96 02:50:24 PM

page 1

Method: COE

Sample Name: ICB ✓

Operator: PMP

Run Time: 02/19/96 14:48:09

Comment:

Mode: CONC Corr. Factor: 1

| Elem  | Ag3280 | Al3082 | As1936 | Ba4934 | Be3130 | Cd2288 | Cr2677 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 1.1760 | 14.41  | 1.215  | .7262  | .0149  | -.1678 | -.4702 |
| SDev  | 1.162  | 12.54  | 8.524  | .5459  | .0240  | 1.2212 | .8108  |
| %RSD  | 660.4  | 87.05  | 701.5  | 75.17  | 161.2  | 727.8  | 172.4  |

|    |        |       |        |       |        |        |        |
|----|--------|-------|--------|-------|--------|--------|--------|
| #1 | 1.107  | 17.47 | 5.720  | .3135 | .0203  | -1.193 | .2654  |
| #2 | -1.127 | .6184 | 6.541  | .5199 | -.0113 | 1.183  | -.3365 |
| #3 | .5483  | 25.14 | -8.616 | 1.345 | .0357  | -.4932 | -1.340 |

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 18.00   | 111.8   | 86.59   | 8.510   | .4600   | 10.08   | 14.99   |
| Low    | -18.00  | -111.8  | -86.59  | -8.510  | -.4600  | -10.08  | -14.99  |

| Elem  | Fe2599 | Ni2316 | Pb2203 | Sb2068 | Se1960 | Tl1908 | V-2924 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 1.022  | -2.727 | 4.971  | -6.189 | 1.374  | -9.618 | -.4269 |
| SDev  | 1.124  | 3.904  | 14.99  | 13.870 | 18.44  | 16.945 | .2300  |
| %RSD  | 110.0  | 143.2  | 301.6  | 224.1  | 1342.  | 176.2  | 53.89  |

|    |       |        |        |        |        |        |        |
|----|-------|--------|--------|--------|--------|--------|--------|
| #1 | .4410 | .9861  | -.9145 | -22.12 | .6783  | -3.344 | -.4268 |
| #2 | .3070 | -6.797 | -6.186 | 3.227  | -16.71 | -28.80 | -.6569 |
| #3 | 2.317 | -2.369 | 22.02  | .3239  | 20.15  | 3.295  | -.1969 |

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 14.73   | 26.04   | 96.86   | 81.16   | 116.5   | 102.7   | 12.04   |
| Low    | -14.73  | -26.04  | -96.86  | -81.16  | -116.5  | -102.7  | -12.04  |

| Elem  | Zn2138 |
|-------|--------|
| Units | ppb    |
| Avg   | .0201  |
| SDev  | .8077  |
| %RSD  | 4019.  |

|    |        |
|----|--------|
| #1 | .2680  |
| #2 | -.8825 |
| #3 | .6748  |

|        |         |
|--------|---------|
| Errors | LC Pass |
| High   | 8.870   |
| Low    | -8.870  |

## Analysis Report

QC Standard

Mon 02-19-96 02:52:41 PM

Page 1

Method: COE

Sample Name: ISP

Operator: FMP

Run Time: 02/19/96 14:50:27

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2233  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 1048.   | 507000. | 974.9   | 478.9   | 461.3   | 997.9   | 464.7   |
| SDev   | 12.     | 5251.   | 34.2    | 5.8     | 3.7     | 4.0     | 2.4     |
| %RSD   | 1.160   | 1.036   | 3.512   | 1.220   | .8127   | .4020   | .5252   |
| #1     | 1057.   | 510900. | 1014.   | 482.5   | 464.1   | 1002.   | 466.3   |
| #2     | 1034.   | 501000. | 957.9   | 472.2   | 457.1   | 994.7   | 461.9   |
| #3     | 1054.   | 509200. | 952.4   | 482.1   | 462.8   | 996.7   | 465.9   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 1000.   | 500000. | 1000.   | 500.0   | 500.0   | 1000.   | 500.0   |
| Range  | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1903  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 187800. | 902.8   | 968.7   | 1048.   | 910.6   | 1017.   | 482.9   |
| SDev   | 1462.   | 6.2     | 29.7    | 6.      | 17.3    | 67.     | 4.3     |
| %RSD   | .7788   | .6923   | 3.068   | .5356   | 1.958   | 6.546   | .8872   |
| #1     | 188900. | 902.4   | 950.5   | 1047.   | 928.9   | 1015.   | 485.0   |
| #2     | 186100. | 895.7   | 952.7   | 1044.   | 909.4   | 951.6   | 477.8   |
| #3     | 188400. | 909.2   | 1003.   | 1055.   | 893.3   | 1085.   | 485.5   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 200000. | 1000.   | 1000.   | 1000.   | 1000.   | 1000.   | 500.0   |
| Range  | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   |
| Elem   | Zn2138  |         |         |         |         |         |         |
| Units  | ppb     |         |         |         |         |         |         |
| Avge   | 963.1   |         |         |         |         |         |         |
| SDev   | 6.9     |         |         |         |         |         |         |
| %RSD   | .7162   |         |         |         |         |         |         |
| #1     | 968.3   |         |         |         |         |         |         |
| #2     | 955.3   |         |         |         |         |         |         |
| #3     | 965.8   |         |         |         |         |         |         |
| Errors | QC Pass |         |         |         |         |         |         |
| Value  | 1000.   |         |         |         |         |         |         |
| Range  | 20.00   |         |         |         |         |         |         |

## Analysis Report

QC Standard

Mon 02-19-96 02:58:03 PM

page 1

Method: COE Sample Name: CRI ✓

Operator: PMP

Run Time: 02/19/96 14:55:48

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Se3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 16.76   | 129.5   | 380.3   | 191.7   | 2.237   | 11.32   | 17.72   |
| SDev   | 4.43    | 17.0    | 10.7    | 4.6     | .095    | 2.29    | 3.34    |
| %RSD   | 26.45   | 8.972   | 2.822   | 2.361   | 1.025   | 20.26   | 18.84   |
| #1     | 20.11   | 207.4   | 374.4   | 187.5   | 9.144   | 13.64   | 20.13   |
| #2     | 11.73   | 187.4   | 373.8   | 191.2   | 9.232   | 11.26   | 19.12   |
| #3     | 18.43   | 173.6   | 392.7   | 196.5   | 9.333   | 9.055   | 13.91   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 20.00   | 200.0   | 400.0   | 200.0   | 10.00   | 10.00   | 20.00   |
| Range  | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 200.8   | 74.61   | 102.1   | 113.4   | 407.6   | 401.0   | 99.89   |
| SDev   | 2.3     | 1.98    | 15.4    | 21.9    | 21.4    | 17.2    | 2.11    |
| %RSD   | 1.150   | 2.651   | 15.13   | 19.34   | 5.256   | 4.297   | 2.112   |
| #1     | 198.3   | 72.38   | 117.1   | 127.2   | 416.0   | 419.1   | 102.2   |
| #2     | 201.3   | 76.14   | 86.21   | 124.8   | 423.6   | 384.8   | 99.43   |
| #3     | 202.9   | 75.33   | 103.0   | 88.09   | 383.3   | 399.2   | 98.05   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 200.0   | 80.00   | 100.0   | 120.0   | 400.0   | 400.0   | 100.0   |
| Range  | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   |
| Elem   | Zn2138  |         |         |         |         |         |         |
| Units  | ppb     |         |         |         |         |         |         |
| Avge   | 37.36   |         |         |         |         |         |         |
| SDev   | .39     |         |         |         |         |         |         |
| %RSD   | 1.038   |         |         |         |         |         |         |
| #1     | 36.97   |         |         |         |         |         |         |
| #2     | 37.35   |         |         |         |         |         |         |
| #3     | 37.75   |         |         |         |         |         |         |
| Errors | QC Pass |         |         |         |         |         |         |
| Value  | 40.00   |         |         |         |         |         |         |
| Range  | 50.00   |         |         |         |         |         |         |

086

## Analysis Report

Mon 02-19-96 03:04:01 PM

Page 1

Method: COE

Sample Name: 96LC322-MB1 ✓

Operator: PMP

Run Time: 02/19/96 15:01:46

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avg    | -1.312  | 12.89   | -12.84  | .6574   | -.0666  | -.5871  | -3.346  |
| SD     | 1.706   | 6.74    | 6.36    | .4295   | .0387   | 1.1489  | .723    |
| %RSD   | 130.0   | 52.27   | 49.53   | 65.33   | 58.06   | 195.7   | 21.62   |
| #1     | .5493   | 8.241   | -13.04  | .5199   | -.0242  | .5311   | -2.543  |
| #2     | -2.801  | 9.807   | -19.09  | .3135   | -.0758  | -1.764  | -3.546  |
| #3     | -1.684  | 20.61   | -6.379  | 1.139   | -.0999  | -.5279  | -3.948  |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 18.00   | 111.8   | 86.59   | 8.510   | .4600   | 10.08   | 14.99   |
| Low    | -18.00  | -111.8  | -86.59  | -8.510  | -.4600  | -10.08  | -14.99  |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avg    | 14.24   | -.4901  | -35.02  | -14.93  | -28.30  | 7.707   | -.1211  |
| SD     | .35     | 3.2953  | 11.98   | 34.46   | 37.92   | 9.116   | 2.0105  |
| %RSD   | 2.489   | 672.4   | 34.20   | 230.9   | 134.0   | 118.3   | 1661.   |
| #1     | 13.97   | 2.328   | -47.66  | 24.80   | 9.028   | 13.25   | -1.809  |
| #2     | 14.11   | .3151   | -23.84  | -36.69  | -27.14  | 12.69   | -.6580  |
| #3     | 14.64   | -4.113  | -33.56  | -32.89  | -66.78  | -2.814  | 2.103   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 14.73   | 26.04   | 96.86   | 81.16   | 116.5   | 102.7   | 12.04   |
| Low    | -14.73  | -26.04  | -96.86  | -81.16  | -116.5  | -102.7  | -12.04  |
| Elem   | Zn2138  |         |         |         |         |         |         |
| Units  | ppb     |         |         |         |         |         |         |
| Avg    | H13.66  |         |         |         |         |         |         |
| SD     | .40     |         |         |         |         |         |         |
| %RSD   | 2.947   |         |         |         |         |         |         |
| #1     | H13.65  |         |         |         |         |         |         |
| #2     | H13.26  |         |         |         |         |         |         |
| #3     | H14.07  |         |         |         |         |         |         |
| Errors | LC High |         |         |         |         |         |         |
| High   | 8.870   |         |         |         |         |         |         |
| Low    | -8.870  |         |         |         |         |         |         |

087

## Analysis Report

Mon 02-19-96 03:06:16 PM

page 1

Method: COE

Sample Name: 96L0322-LC1 ✓

Operator: FMP

Run Time: 02/19/96 15:04:04

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 492.9   | 5057.   | 9727.   | 4987.   | 236.4   | 248.9   | 495.3   |
| SDev   | 3.4     | 37.     | 74.     | 41.     | 2.2     | 3.2     | 2.9     |
| %RSD   | .6898   | .7231   | .7644   | .8255   | .9116   | 1.274   | .5895   |
| #1     | 489.0   | 5015.   | 9648.   | 4939.   | 234.1   | 249.3   | 492.6   |
| #2     | 495.1   | 5081.   | 9739.   | 5010.   | 236.9   | 245.5   | 497.2   |
| #3     | 494.5   | 5076.   | 9795.   | 5011.   | 238.3   | 251.6   | 498.0   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 573.5   | 5705.   | 11000.  | 5475.   | 278.0   | 287.3   | 563.5   |
| Low    | 406.0   | 4470.   | 9270.   | 4440.   | 222.5   | 211.3   | 447.5   |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 5048.   | 1966.   | 2458.   | 3046.   | 9766.   | 9712.   | 2549.   |
| SDev   | 45.     | 21.     | 33.     | 26.     | 100.    | 64.     | 23.     |
| %RSD   | .8936   | 1.076   | 1.323   | .8592   | 1.024   | .6612   | .9076   |
| #1     | 4996.   | 1945.   | 2422.   | 3038.   | 9655.   | 9680.   | 2523.   |
| #2     | 5071.   | 1965.   | 2468.   | 3025.   | 9794.   | 9786.   | 2558.   |
| #3     | 5077.   | 1987.   | 2484.   | 3076.   | 9849.   | 9670.   | 2566.   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 5595.   | 2206.   | 2735.   | 3273.   | 11000.  | 10740.  | 2815.   |
| Low    | 4420.   | 1814.   | 2303.   | 2778.   | 9240.   | 9500.   | 2255.   |
| Elem   | Zn2138  |         |         |         |         |         |         |
| Units  | ppb     |         |         |         |         |         |         |
| Avge   | 986.9   |         |         |         |         |         |         |
| SDev   | 8.0     |         |         |         |         |         |         |
| %RSD   | .8102   |         |         |         |         |         |         |
| #1     | 978.1   |         |         |         |         |         |         |
| #2     | 989.0   |         |         |         |         |         |         |
| #3     | 993.6   |         |         |         |         |         |         |
| Errors | LC Pass |         |         |         |         |         |         |
| High   | 1109.   |         |         |         |         |         |         |
| Low    | 907.0   |         |         |         |         |         |         |

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## Analysis Report

Mon 02-19-96 03:03:35 PM

page 1

Method: COE

Sample Name: 96L0322-LC2 ✓

Operator: FMP

Run Time: 02/19/96 15:06:22

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2268  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 501.4   | 5127.   | 9951.   | 5065.   | 241.0   | 251.3   | 503.5   |
| SDev   | 4.3     | 49.     | 86.     | 23.     | 1.3     | 4.0     | 3.4     |
| %RSD   | .8652   | .9577   | .8656   | .4552   | .5198   | 1.576   | .6778   |
| #1     | 497.9   | 5083.   | 9859.   | 5039.   | 239.6   | 255.1   | 500.0   |
| #2     | 500.1   | 5119.   | 9963.   | 5082.   | 241.6   | 251.6   | 503.6   |
| #3     | 506.3   | 5180.   | 10030.  | 5075.   | 241.9   | 247.2   | 506.8   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 573.5   | 5705.   | 11000.  | 5475.   | 278.0   | 287.3   | 563.5   |
| Low    | 406.0   | 4470.   | 9270.   | 4440.   | 222.5   | 211.3   | 447.5   |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 5130.   | 2004.   | 2484.   | 3101.   | 9910.   | 9944.   | 2596.   |
| SDev   | 23.     | 6.      | 15.     | 3.      | 53.     | 62.     | 13.     |
| %RSD   | .4519   | .2924   | .6218   | .0857   | .5352   | .6207   | .5023   |
| #1     | 5104.   | 2009.   | 2480.   | 3104.   | 9854.   | 9914.   | 2581.   |
| #2     | 5142.   | 1998.   | 2501.   | 3099.   | 9919.   | 9903.   | 2605.   |
| #3     | 5146.   | 2004.   | 2471.   | 3100.   | 9959.   | 10010.  | 2602.   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 5595.   | 2206.   | 2735.   | 3273.   | 11000.  | 10740.  | 2815.   |
| Low    | 4420.   | 1814.   | 2303.   | 2778.   | 9240.   | 9500.   | 2255.   |
| Elem   | Zn2138  |         |         |         |         |         |         |
| Units  | ppb     |         |         |         |         |         |         |
| Avge   | 994.3   |         |         |         |         |         |         |
| SDev   | 6.0     |         |         |         |         |         |         |
| %RSD   | .6011   |         |         |         |         |         |         |
| #1     | 987.5   |         |         |         |         |         |         |
| #2     | 996.9   |         |         |         |         |         |         |
| #3     | 998.5   |         |         |         |         |         |         |
| Errors | LC Pass |         |         |         |         |         |         |
| High   | 1109.   |         |         |         |         |         |         |
| Low    | 907.0   |         |         |         |         |         |         |

## Analysis Report

Mon 02-19-96 03:12:06 PM

page 1

Method: COE Sample Name: 96021964-008  
 Run Time: 02/19/96 15:09:32  
 Comment:  
 Mode: CONC Corr. Factor: 1

Operator: PMP

|        |          |          |          |          |          |          |          |
|--------|----------|----------|----------|----------|----------|----------|----------|
| Elem   | Ag3280 ✓ | Al3082   | As1936 ✓ | Ba4934 ✓ | Be3130 ✓ | Cd2288 ✓ | Cr2677 ✓ |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avg    | -2.614   | 39.91    | -15.43   | 1.276    | -0.0098  | -1.025   | -0.5371  |
| SDev   | 4.116    | 17.42    | 10.47    | .725     | .0578    | .571     | 3.8224   |
| %RSD   | 157.5    | 43.65    | 67.85    | 56.77    | 590.0    | 55.76    | 711.7    |
| #1     | .5506    | 54.21    | -7.961   | 1.345    | .0384    | -.5034   | 1.670    |
| #2     | -1.125   | 45.02    | -10.94   | 1.964    | .0061    | -.9351   | 1.670    |
| #3     | -7.267   | 20.51    | -27.40   | .5199    | -.0739   | -1.636   | -4.951   |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 10000.   | 1000000. | 100000.  | 100000.  | 2000.    | 25000.   | 50000.   |
| Low    | -18.00   | -111.8   | -86.59   | -8.510   | -.4600   | -10.08   | -14.99   |
| Elem   | Fe2599   | Ni2316 ✓ | Pb2203 ✓ | Sb2068 ✓ | Se1960 ✓ | Tl1908 ✓ | V-2924   |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avg    | 29.07    | 3.670    | -6.532   | -23.67   | -9.747   | 2.155    | -1.196   |
| SDev   | 1.37     | .403     | 6.201    | 18.46    | 24.728   | 20.57    | .133     |
| %RSD   | 4.708    | 10.97    | 94.94    | 77.99    | 253.7    | 954.6    | 11.10    |
| #1     | 30.05    | 4.073    | -12.43   | -2.881   | 18.07    | 21.53    | -1.119   |
| #2     | 29.65    | 3.267    | -.0681   | -29.99   | -18.09   | 4.368    | -1.119   |
| #3     | 27.51    | 3.670    | -7.095   | -38.15   | -29.22   | -19.43   | -1.349   |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 250000.  | 200000.  | 250000.  | 120000.  | 100000.  | 100000.  | 25000.   |
| Low    | -14.73   | -26.04   | -96.86   | -81.16   | -116.5   | -102.7   | -12.04   |
| Elem   | Zn2138   |          |          |          |          |          |          |
| Units  | ppb      |          |          |          |          |          |          |
| Avg    | 35.95    |          |          |          |          |          |          |
| SDev   | .46      |          |          |          |          |          |          |
| %RSD   | 1.268    |          |          |          |          |          |          |
| #1     | 35.69    |          |          |          |          |          |          |
| #2     | 36.48    |          |          |          |          |          |          |
| #3     | 35.69    |          |          |          |          |          |          |
| Errors | LC Pass  |          |          |          |          |          |          |
| High   | 100000.  |          |          |          |          |          |          |
| Low    | -8.870   |          |          |          |          |          |          |

## Analysis Report

Mon 02-19-96 03:15:19 PM

page 1

Method: COE

Sample Name: 9602L964-C13

Operator: FMP

Run Time: 02/19/96 15:13:06

Comment:

Mode: CONC Corr. Factor: 1

|        |          |          |          |          |          |          |          |
|--------|----------|----------|----------|----------|----------|----------|----------|
| Elem   | Ag3280 ✓ | Al3082   | As1936 ✓ | Ba4934 ✓ | Be3130 ✓ | Cd2288 ✓ | Cr2677 ✓ |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avge   | -2.785   | 385.6    | -6.999   | 2.652    | -.0240   | 1.074    | 7.421    |
| SDev   | 1.675    | 14.6     | 10.576   | 1.018    | .0544    | 1.026    | 2.351    |
| %RSD   | 60.16    | 3.782    | 151.1    | 38.38    | 226.6    | 95.52    | 31.68    |
| #1     | -4.460   | 371.2    | -16.70   | 2.171    | -.0732   | 2.021    | 5.682    |
| #2     | -1.110   | 400.4    | -8.565   | 3.821    | .0345    | -.0162   | 10.10    |
| #3     | -2.785   | 385.1    | 4.272    | 1.954    | -.0333   | 1.218    | 6.485    |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 10000.   | 1000000. | 100000.  | 100000.  | 2000.    | 25000.   | 50000.   |
| Low    | -18.00   | -111.8   | -86.59   | -8.510   | -.4600   | -10.08   | -14.99   |
| Elem   | Fe2599   | Ni2316 ✓ | Pb2203 ✓ | Sb2068 ✓ | Se1960 ✓ | Tl1908 ✓ | V-2924   |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avge   | 214.6    | 36.73    | 22.43    | -24.00   | -4.367   | 3.197    | .0173    |
| SDev   | 3.1      | 2.18     | 2.34     | 26.74    | 9.596    | 8.474    | 1.509    |
| %RSD   | 1.467    | 5.941    | 10.42    | 111.4    | 219.8    | 265.1    | 8706.    |
| #1     | 211.5    | 34.27    | 24.21    | -54.14   | -15.26   | 6.341    | -1.593   |
| #2     | 217.8    | 37.49    | 23.29    | -3.113   | -.6563   | 9.650    | .2472    |
| #3     | 214.7    | 38.43    | 19.78    | -14.76   | 2.821    | -6.400   | 1.398    |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 250000.  | 200000.  | 250000.  | 120000.  | 100000.  | 100000.  | 25000.   |
| Low    | -14.73   | -26.04   | -96.86   | -81.16   | -116.5   | -102.7   | -12.04   |
| Elem   | Zn2138   |          |          |          |          |          |          |
| Units  | ppb      |          |          |          |          |          |          |
| Avge   | 1303.    |          |          |          |          |          |          |
| SDev   | 4.       |          |          |          |          |          |          |
| %RSD   | .2695    |          |          |          |          |          |          |
| #1     | 1307.    |          |          |          |          |          |          |
| #2     | 1302.    |          |          |          |          |          |          |
| #3     | 1300.    |          |          |          |          |          |          |
| Errors | LC Pass  |          |          |          |          |          |          |
| High   | 100000.  |          |          |          |          |          |          |
| Low    | -8.870   |          |          |          |          |          |          |

## Analysis Report

Mon 02-19-96 03:18.32 PM

page 1

Method: COE Sample Name: 96021964-018  
 Run Time: 02/19/96 15:16:18  
 Comment:  
 Mode: CONC Corr. Factor: 1

Operator: PMP

|        |          |          |          |          |          |          |          |
|--------|----------|----------|----------|----------|----------|----------|----------|
| Elem   | Ag3280 ✓ | Al3082   | As1936 ✓ | Ba4934 ✓ | Be3130 ✓ | Cd2238 ✓ | Cr2677 ✓ |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avg    | .0020    | 211.9    | -17.08   | 2.033    | -.0549   | 1.868    | 5.415    |
| SDev   | 2.434    | 13.4     | 7.11     | .596     | .0432    | 1.938    | 2.325    |
| %RSD   | 123800.  | 6.303    | 41.60    | 29.30    | 78.73    | 103.3    | 42.94    |
| #1     | -1.115   | 202.7    | -16.80   | 1.345    | -.0235   | -.3663   | 8.090    |
| #2     | -1.673   | 205.8    | -24.33   | 2.377    | -.0370   | 3.095    | 3.877    |
| #3     | 2.794    | 227.2    | -10.12   | 2.377    | -.1041   | 2.875    | 4.278    |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 10000.   | 1000000. | 100000.  | 100000.  | 2000.    | 25000.   | 50000.   |
| Low    | -18.00   | -111.8   | -86.59   | -8.510   | -.4600   | -10.08   | -14.99   |
| Elem   | Fe2599   | Ni2316 ✓ | Pb2203 ✓ | Sb2068 ✓ | Se1960 ✓ | Tl1908 ✓ | V-2924   |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avg    | 152.2    | 7.696    | 4.127    | 11.30    | -9.252   | 1.439    | -2.356   |
| SDev   | 2.2      | 3.910    | 9.810    | 13.67    | 18.155   | 5.830    | .531     |
| %RSD   | 1.415    | 50.81    | 237.7    | 121.0    | 196.2    | 405.1    | 22.56    |
| #1     | 153.7    | 3.402    | -6.449   | -.5572   | 11.15    | 6.972    | -2.049   |
| #2     | 153.1    | 8.635    | 5.899    | 26.26    | -15.28   | -4.649   | -2.970   |
| #3     | 149.7    | 11.05    | 12.93    | 8.197    | -23.63   | 1.996    | -2.049   |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 250000.  | 200000.  | 250000.  | 120000.  | 100000.  | 100000.  | 25000.   |
| Low    | -14.73   | -26.04   | -96.86   | -81.16   | -116.5   | -102.7   | -12.04   |
| Elem   | Zn2138   |          |          |          |          |          |          |
| Units  | ppb      |          |          |          |          |          |          |
| Avg    | 5797.    |          |          |          |          |          |          |
| SDev   | 15.      |          |          |          |          |          |          |
| %RSD   | .2558    |          |          |          |          |          |          |
| #1     | 5781.    |          |          |          |          |          |          |
| #2     | 5803.    |          |          |          |          |          |          |
| #3     | 5809.    |          |          |          |          |          |          |
| Errors | LC Pass  |          |          |          |          |          |          |
| High   | 100000.  |          |          |          |          |          |          |
| Low    | -8.870   |          |          |          |          |          |          |

## Analysis Report

Mon 02-19-96 03:21:44 PM

page 1

Method: COE Sample Name: 9602L964-021  
 Run Time: 02/19/96 15:19:30  
 Comment:  
 Mode: CONC Corr. Factor: 1

Operator: PMP

| Elem  | Ag3280 ✓ | Al3082 | As1936 ✓ | Ea4934 ✓ | Be3130 ✓ | Cd2283 ✓ | Cr2677 ✓ |
|-------|----------|--------|----------|----------|----------|----------|----------|
| Units | ppb      | ppb    | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avg   | .7698    | 917.2  | -2.629   | 4.578    | -.0437   | 49.11    | 16.52    |
| SDev  | 2.639    | 22.9   | 13.865   | .781     | .0720    | 2.33     | 2.04     |
| %RSD  | 342.8    | 2.501  | 527.3    | 17.06    | 164.7    | 4.751    | 12.33    |

|    |        |       |        |       |        |       |       |
|----|--------|-------|--------|-------|--------|-------|-------|
| #1 | 2.817  | 942.7 | 11.07  | 5.472 | -.1136 | 46.51 | 14.31 |
| #2 | -2.208 | 910.5 | -16.65 | 4.234 | -.0478 | 49.80 | 16.92 |
| #3 | 1.700  | 898.3 | -2.314 | 4.028 | .0302  | 51.02 | 18.32 |

| Errors | LC Pass | LC Pass  | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
|--------|---------|----------|---------|---------|---------|---------|---------|
| High   | 10000.  | 1000000. | 100000. | 100000. | 2000.   | 25000.  | 50000.  |
| Low    | -18.00  | -111.8   | -86.59  | -8.510  | -.4600  | -10.08  | -14.99  |

| Elem  | Fe2599 | Ni2316 ✓ | Pb2203 ✓ | Sb2068 ✓ | Se1960 ✓ | Tl1908 ✓ | V-2924 |
|-------|--------|----------|----------|----------|----------|----------|--------|
| Units | ppb    | ppb      | ppb      | ppb      | ppb      | ppb      | ppb    |
| Avg   | 444.1  | 18.39    | 109.4    | -2.696   | 13.31    | 11.37    | 6.904  |
| SDev  | 1.6    | 4.27     | 16.4     | 15.315   | 20.74    | 22.82    | .460   |
| %RSD  | .3557  | 23.20    | 14.95    | 568.1    | 155.8    | 200.8    | 6.668  |

|    |       |       |       |        |        |        |       |
|----|-------|-------|-------|--------|--------|--------|-------|
| #1 | 444.5 | 13.60 | 90.52 | 9.149  | -8.944 | 37.01  | 6.904 |
| #2 | 445.4 | 19.77 | 119.7 | -19.99 | 16.79  | 3.801  | 6.443 |
| #3 | 442.3 | 21.79 | 117.9 | 2.753  | 32.09  | -6.713 | 7.364 |

| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
|--------|---------|---------|---------|---------|---------|---------|---------|
| High   | 250000. | 200000. | 250000. | 120000. | 100000. | 100000. | 25000.  |
| Low    | -14.73  | -26.04  | -96.86  | -81.16  | -116.5  | -102.7  | -12.04  |

| Elem  | Zn2138 |
|-------|--------|
| Units | ppb    |
| Avg   | 513.6  |
| SDev  | 3.1    |
| %RSD  | .6110  |

|    |       |
|----|-------|
| #1 | 515.4 |
| #2 | 515.5 |
| #3 | 510.0 |

| Errors | LC Pass |
|--------|---------|
| High   | 100000. |
| Low    | -8.870  |

## Analysis Report

Mon 02-19-96 03:24:56 PM

Page 1

Method: COE

Sample Name: 9602L964-025

Operator: PMP

Run Time: 02/19/96 15:22:43

Comment:

Mode: CONC Corr. Factor: 1

|        |          |          |          |          |          |          |          |
|--------|----------|----------|----------|----------|----------|----------|----------|
| Elem   | Ag3280 ✓ | Al3082   | As1936 ✓ | Ba4934 ✓ | Be3130 ✓ | Cd2238 ✓ | Cr2677 ✓ |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avg    | 1.691    | 971.0    | -1.673   | 20.05    | .0989    | 5.292    | 301.1    |
| SDev   | 1.675    | 12.4     | 7.573    | .32      | .0615    | 2.699    | 1.6      |
| %RSD   | 99.07    | 1.274    | 452.8    | 1.572    | 62.16    | 51.00    | .5427    |
| #1     | 3.366    | 984.3    | -2.733   | 20.12    | .0601    | 8.017    | 299.2    |
| #2     | .0158    | 968.9    | -8.660   | 19.71    | .0667    | 5.241    | 301.8    |
| #3     | 1.691    | 959.8    | 6.375    | 20.33    | .1697    | 2.619    | 302.2    |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 10000.   | 1000000. | 100000.  | 100000.  | 2000.    | 25000.   | 50000.   |
| Low    | -18.00   | -111.8   | -86.59   | -8.510   | -.4600   | -10.08   | -14.99   |
| Elem   | Fe2599   | Ni2316 ✓ | Pb2203 ✓ | Sb2068 ✓ | Se1960 ✓ | Tl1908 ✓ | V-2924   |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avg    | 322.5    | 57.17    | 76.37    | 98.75    | -24.28   | 12.62    | 13.43    |
| SDev   | 2.1      | 1.88     | 4.92     | 26.51    | 8.43     | 15.52    | 1.76     |
| %RSD   | .6442    | 3.289    | 6.443    | 26.85    | 34.74    | 123.0    | 13.09    |
| #1     | 320.9    | 57.75    | 75.47    | 108.7    | -34.01   | 30.52    | 13.82    |
| #2     | 324.8    | 55.07    | 71.96    | 68.71    | -19.41   | 4.506    | 11.51    |
| #3     | 321.6    | 58.69    | 81.68    | 118.9    | -19.41   | 2.843    | 14.97    |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 250000.  | 200000.  | 250000.  | 120000.  | 100000.  | 100000.  | 25000.   |
| Low    | -14.73   | -26.04   | -96.86   | -81.16   | -116.5   | -102.7   | -12.04   |
| Elem   | Zn2138   |          |          |          |          |          |          |
| Units  | ppb      |          |          |          |          |          |          |
| Avg    | 1374.    |          |          |          |          |          |          |
| SDev   | 15.      |          |          |          |          |          |          |
| %RSD   | 1.074    |          |          |          |          |          |          |
| #1     | 1368.    |          |          |          |          |          |          |
| #2     | 1391.    |          |          |          |          |          |          |
| #3     | 1364.    |          |          |          |          |          |          |
| Errors | LC Pass  |          |          |          |          |          |          |
| High   | 100000.  |          |          |          |          |          |          |
| Low    | -8.870   |          |          |          |          |          |          |

## Analysis Report

QC Standard

Mon 02-19-96 03:29:05 PM

page 1

Method: COE

Sample Name: CCV

Operator: PMP

Run Time: 02/19/96 15:26:51

Comment:

Mode: CONC Corr. Factor: 1

| Elem  | Ag3280 | Al3082 | As1936 | Ba4934 | Be3130 | Cd2288 | Cr2677 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 504.8  | 5094.  | 10520. | 4957.  | 241.9  | 265.8  | 506.0  |
| SDev  | 2.8    | 23.    | 34.    | 28.    | 1.1    | 3.5    | 2.4    |
| %RSD  | .5570  | .4422  | .3240  | .5558  | .4358  | 1.313  | .4697  |

|    |       |       |        |       |       |       |       |
|----|-------|-------|--------|-------|-------|-------|-------|
| #1 | 505.2 | 5082. | 10490. | 4930. | 241.3 | 264.9 | 507.2 |
| #2 | 501.8 | 5079. | 10500. | 4957. | 241.3 | 262.8 | 503.2 |
| #3 | 507.4 | 5120. | 10560. | 4985. | 243.2 | 269.6 | 507.4 |

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 500.0   | 5000.   | 10000.  | 5000.   | 250.0   | 250.0   | 500.0   |
| Range  | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   |

| Elem  | Fe2599 | Ni2316 | Pb2203 | Sb2068 | Se1960 | Tl1908 | V-2924 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 5114.  | 2030.  | 2574.  | 3191.  | 10500. | 10440. | 2575.  |
| SDev  | 21.    | 14.    | 30.    | 7.     | 28.    | 77.    | 13.    |
| %RSD  | .4144  | .7042  | 1.184  | .2346  | .2702  | .7381  | .4931  |

|    |       |       |       |       |        |        |       |
|----|-------|-------|-------|-------|--------|--------|-------|
| #1 | 5099. | 2014. | 2608. | 3198. | 10480. | 10350. | 2565. |
| #2 | 5106. | 2037. | 2565. | 3192. | 10480. | 10460. | 2572. |
| #3 | 5139. | 2039. | 2548. | 3183. | 10530. | 10500. | 2589. |

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 5000.   | 2000.   | 2500.   | 3000.   | 10000.  | 10000.  | 2500.   |
| Range  | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   |

| Elem  | Zn2138 |
|-------|--------|
| Units | ppb    |
| Avg   | 999.0  |
| SDev  | 4.7    |
| %RSD  | .4700  |

|    |       |
|----|-------|
| #1 | 996.7 |
| #2 | 996.0 |
| #3 | 1004. |

|        |         |
|--------|---------|
| Errors | QC Pass |
| Value  | 1000.   |
| Range  | 10.00   |

## Analysis Report

Blank Sample

Mon 02-19-96 03:32:37 PM

page 1

Method: COE

Sample Name: CCB ✓

Operator: PMP

Run Time: 02/19/96 15:30:22

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | -.5684  | 7.295   | .7228   | .4511   | -.0043  | -.9566  | -.0690  |
| SDev   | 1.6750  | 26.05   | 1.539   | .8339   | .0541   | 3.0867  | 2.3079  |
| %RSD   | 294.7   | 357.2   | 213.0   | 184.9   | 1255.   | 322.7   | 3345.   |
| #1     | -2.243  | -8.486  | 2.014   | -.3055  | -.0031  | -4.481  | -.1359  |
| #2     | 1.106   | 37.37   | 1.135   | 1.345   | -.0591  | 1.267   | -2.343  |
| #3     | -.5683  | -6.997  | -.9808  | .3135   | .0492   | .3441   | 2.272   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 18.00   | 111.8   | 86.59   | 8.510   | .4600   | 10.08   | 14.99   |
| Low    | -18.00  | -111.8  | -86.59  | -8.510  | -.4600  | -10.08  | -14.99  |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 1.602   | -2.100  | -8.254  | -10.26  | 11.34   | -15.16  | .6470   |
| SDev   | 1.697   | 2.681   | 4.091   | 11.82   | 3.50    | 8.79    | 1.497   |
| %RSD   | 105.9   | 127.6   | 49.57   | 115.2   | 30.86   | 58.00   | 231.4   |
| #1     | 1.915   | -.7585  | -10.59  | 1.802   | 14.59   | -20.51  | 2.104   |
| #2     | -.2289  | -5.187  | -10.65  | -10.76  | 7.633   | -19.95  | -.8870  |
| #3     | 3.121   | -.3559  | -3.530  | -21.82  | 11.81   | -5.010  | .7235   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 14.73   | 26.04   | 96.86   | 81.16   | 116.5   | 102.7   | 12.04   |
| Low    | -14.73  | -26.04  | -96.86  | -81.16  | -116.5  | -102.7  | -12.04  |
| Elem   | Zn2138  |         |         |         |         |         |         |
| Units  | ppb     |         |         |         |         |         |         |
| Avge   | -.7699  |         |         |         |         |         |         |
| SDev   | .2214   |         |         |         |         |         |         |
| %RSD   | 28.75   |         |         |         |         |         |         |
| #1     | -.9065  |         |         |         |         |         |         |
| #2     | -.8888  |         |         |         |         |         |         |
| #3     | -.5145  |         |         |         |         |         |         |
| Errors | LC Pass |         |         |         |         |         |         |
| High   | 8.870   |         |         |         |         |         |         |
| Low    | -8.870  |         |         |         |         |         |         |



## Analysis Report

Mon 02-19-96 03:34:54 PM

page 1

Method: COE

Sample Name: 9602L964-026

Operator: PMP

Run Time: 02/19/96 15:32:41

Comment:

Mode: CONC Corr. Factor: 1

| Elem  | Ag3280 ✓ | Al3082 | As1936 ✓ | Ba4934 ✓ | Be3130 ✓ | Cd2288 ✓ | Cr2677 ✓ |
|-------|----------|--------|----------|----------|----------|----------|----------|
| Units | ppb      | ppb    | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avge  | 1.688    | 859.1  | -1.666   | 15.79    | .0592    | 2.266    | 218.7    |
| SDev  | 1.675    | 3.2    | 9.059    | .55      | .0303    | 1.028    | 1.2      |
| %RSD  | 99.24    | .3715  | 543.6    | 3.458    | 51.26    | 45.36    | .5530    |

|    |       |       |        |       |       |       |       |
|----|-------|-------|--------|-------|-------|-------|-------|
| #1 | 3.363 | 861.6 | 7.623  | 16.20 | .0940 | 2.122 | 218.5 |
| #2 | 1.688 | 855.5 | -2.147 | 15.17 | .0443 | 1.318 | 217.5 |
| #3 | .0128 | 860.1 | -10.48 | 16.00 | .0391 | 3.358 | 219.9 |

| Errors | LC Pass | LC Pass  | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
|--------|---------|----------|---------|---------|---------|---------|---------|
| High   | 10000.  | 1000000. | 100000. | 100000. | 2000.   | 25000.  | 50000.  |
| Low    | -18.00  | -111.8   | -86.59  | -8.510  | -.4600  | -10.08  | -14.99  |

| Elem  | Fe2599 | Ni2316 ✓ | Pb2203 ✓ | Sb2068 ✓ | Se1960 ✓ | Tl1908 ✓ | V-2924 |
|-------|--------|----------|----------|----------|----------|----------|--------|
| Units | ppb    | ppb      | ppb      | ppb      | ppb      | ppb      | ppb    |
| Avge  | 289.2  | 17.27    | 68.58    | 91.46    | .0579    | -5.589   | 8.526  |
| SDev  | 1.2    | 2.59     | 13.87    | 9.98     | 13.96    | 33.217   | 1.218  |
| %RSD  | .4204  | 15.00    | 20.22    | 10.91    | 24130.   | 594.3    | 14.28  |

|    |       |       |       |       |        |        |       |
|----|-------|-------|-------|-------|--------|--------|-------|
| #1 | 290.5 | 20.18 | 78.28 | 80.86 | 13.27  | 30.57  | 7.605 |
| #2 | 289.0 | 15.21 | 74.76 | 100.7 | 1.449  | -12.60 | 8.066 |
| #3 | 288.1 | 16.42 | 52.69 | 92.83 | -14.55 | -34.74 | 9.907 |

| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
|--------|---------|---------|---------|---------|---------|---------|---------|
| High   | 250000. | 200000. | 250000. | 120000. | 100000. | 100000. | 25000.  |
| Low    | -14.73  | -26.04  | -96.86  | -81.16  | -116.5  | -102.7  | -12.04  |

| Elem  | Zn2138 |
|-------|--------|
| Units | ppb    |
| Avge  | 3131.  |
| SDev  | 3.     |
| %RSD  | .0851  |

|    |       |
|----|-------|
| #1 | 3133. |
| #2 | 3128. |
| #3 | 3132. |

| Errors | LC Pass |
|--------|---------|
| High   | 100000. |
| Low    | -8.870  |

## Analysis Report

QC Standard

Mon 02-19-96 03:38:08 PM

page 1

Method: COE

Sample Name: ISB

Operator: PMP

Run Time: 02/19/96 15:35:54

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 1066.   | 517100. | 939.3   | 489.8   | 469.1   | 1006.   | 470.8   |
| SDev   | 6.      | 5421.   | 33.8    | 3.8     | 5.6     | 10.     | 4.3     |
| %RSD   | .5781   | 1.048   | 3.594   | .7680   | 1.185   | 1.002   | .9192   |
| #1     | 1063.   | 516000. | 957.2   | 489.1   | 467.0   | 1005.   | 468.9   |
| #2     | 1061.   | 512300. | 900.3   | 486.4   | 464.8   | 996.0   | 467.7   |
| #3     | 1073.   | 523000. | 960.2   | 493.9   | 475.3   | 1016.   | 475.7   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 1000.   | 500000. | 1000.   | 500.0   | 500.0   | 1000.   | 500.0   |
| Range  | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 190300. | 916.3   | 947.4   | 1038.   | 899.4   | 983.1   | 490.0   |
| SDev   | 1792.   | 13.5    | 28.0    | 40.     | 7.9     | 7.0     | 4.4     |
| %RSD   | .9418   | 1.478   | 2.957   | 3.846   | .8749   | .7088   | .8968   |
| #1     | 190000. | 906.0   | 964.2   | 1018.   | 908.4   | 980.2   | 486.3   |
| #2     | 188700. | 911.2   | 915.1   | 1012.   | 896.2   | 978.1   | 488.9   |
| #3     | 192200. | 931.6   | 963.0   | 1084.   | 893.6   | 991.0   | 494.9   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 200000. | 1000.   | 1000.   | 1000.   | 1000.   | 1000.   | 500.0   |
| Range  | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   |
| Elem   | Zn2138  |         |         |         |         |         |         |
| Units  | ppb     |         |         |         |         |         |         |
| Avge   | 977.8   |         |         |         |         |         |         |
| SDev   | 9.6     |         |         |         |         |         |         |
| %RSD   | .9850   |         |         |         |         |         |         |
| #1     | 975.3   |         |         |         |         |         |         |
| #2     | 969.7   |         |         |         |         |         |         |
| #3     | 988.4   |         |         |         |         |         |         |
| Errors | QC Pass |         |         |         |         |         |         |
| Value  | 1000.   |         |         |         |         |         |         |
| Range  | 20.00   |         |         |         |         |         |         |

## Analysis Report

QC Standard

Mon 02-19-96 03:43:30 PM

page 1

Method: COE

Sample Name: CCV

Operator: PMP

Run Time: 02/19/96 15:41:15

Comment:

Mode: CONC Corr. Factor: 1

|       |        |        |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Elem  | Ag3280 | Al3082 | As1936 | Ba4934 | Be3130 | Cd2288 | Cr2677 |
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avge  | 502.2  | 5082.  | 10480. | 4939.  | 241.0  | 263.2  | 503.8  |
| SDev  | 3.3    | 39.    | 88.    | 57.    | 2.4    | 2.1    | 7.4    |
| %RSD  | .6519  | .7723  | .8422  | 1.156  | 1.008  | .7919  | 1.460  |

|    |       |       |        |       |       |       |       |
|----|-------|-------|--------|-------|-------|-------|-------|
| #1 | 503.5 | 5110. | 10570. | 5004. | 243.7 | 265.6 | 506.6 |
| #2 | 504.6 | 5099. | 10470. | 4912. | 240.2 | 261.9 | 509.3 |
| #3 | 498.5 | 5037. | 10390. | 4900. | 239.1 | 262.1 | 495.4 |

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 500.0   | 5000.   | 10000.  | 5000.   | 250.0   | 250.0   | 500.0   |
| Range  | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   |

|       |        |        |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Elem  | Fe2599 | Ni2316 | Pb2203 | Sb2068 | Se1960 | Tl1908 | V-2924 |
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avge  | 5085.  | 2006.  | 2551.  | 3183.  | 10470. | 10380. | 2562.  |
| SDev  | 38.    | 7.     | 31.    | 49.    | 132.   | 77.    | 19.    |
| %RSD  | .7455  | .3554  | 1.207  | 1.530  | 1.261  | .7427  | .7561  |

|    |       |       |       |       |        |        |       |
|----|-------|-------|-------|-------|--------|--------|-------|
| #1 | 5127. | 2011. | 2568. | 3223. | 10610. | 10470. | 2585. |
| #2 | 5075. | 2008. | 2571. | 3197. | 10440. | 10320. | 2553. |
| #3 | 5053. | 1998. | 2516. | 3128. | 10350. | 10350. | 2549. |

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 5000.   | 2000.   | 2500.   | 3000.   | 10000.  | 10000.  | 2500.   |
| Range  | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   |

|       |        |
|-------|--------|
| Elem  | Zn2138 |
| Units | ppb    |
| Avge  | 996.7  |
| SDev  | 6.4    |
| %RSD  | .6436  |

|    |       |
|----|-------|
| #1 | 1004. |
| #2 | 994.0 |
| #3 | 992.0 |

|        |         |
|--------|---------|
| Errors | QC Pass |
| Value  | 1000.   |
| Range  | 10.00   |

## Analysis Report

Blank Sample

Mon 02-19-96 03:47:02 PM

page 1

Method: COE

Sample Name: CCB ✓

Operator: PMP

Run Time: 02/19/96 15:44:48

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avg    | -1.7545 | 4.236   | -11.06  | .3823   | .0597   | -2.367  | 2.539   |
| SDev   | 3.0752  | 9.355   | 11.30   | .6304   | .0359   | 1.393   | 1.336   |
| %RSD   | 407.6   | 220.8   | 102.2   | 164.9   | 60.02   | 58.84   | 52.61   |
| #1     | -2.802  | -3.969  | -18.29  | -.3055  | .1009   | -.8212  | 3.876   |
| #2     | 2.782   | 14.42   | -16.86  | .9326   | .0351   | -2.755  | 2.874   |
| #3     | -2.243  | 2.255   | 1.962   | .5199   | .0433   | -3.524  | 1.068   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 18.00   | 111.8   | 86.59   | 8.510   | .4600   | 10.08   | 14.99   |
| Low    | -18.00  | -111.8  | -86.59  | -8.510  | -.4600  | -10.08  | -14.99  |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2060  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avg    | 2.406   | .7624   | 5.867   | -19.68  | 16.44   | 2.002   | .8003   |
| SDev   | .409    | 1.076   | 7.141   | 2.11    | 7.66    | 14.10   | 1.742   |
| %RSD   | 17.01   | 141.2   | 121.7   | 10.73   | 46.59   | 704.4   | 217.7   |
| #1     | 2.853   | .9519   | 14.11   | -18.33  | 20.15   | -7.222  | -.4270  |
| #2     | 2.317   | 1.791   | 1.736   | -22.11  | 21.54   | -5.008  | .0333   |
| #3     | 2.049   | -.3559  | 1.752   | -18.59  | 7.634   | 18.24   | 2.795   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 14.73   | 26.04   | 96.86   | 31.16   | 116.5   | 102.7   | 12.04   |
| Low    | -14.73  | -26.04  | -96.86  | -31.16  | -116.5  | -102.7  | -12.04  |
| Elem   | Zn2138  |         |         |         |         |         |         |
| Units  | ppb     |         |         |         |         |         |         |
| Avg    | .3999   |         |         |         |         |         |         |
| SDev   | .9867   |         |         |         |         |         |         |
| %RSD   | 246.8   |         |         |         |         |         |         |
| #1     | .2682   |         |         |         |         |         |         |
| #2     | 1.446   |         |         |         |         |         |         |
| #3     | -.5144  |         |         |         |         |         |         |
| Errors | LC Pass |         |         |         |         |         |         |
| High   | 8.870   |         |         |         |         |         |         |
| Low    | -8.870  |         |         |         |         |         |         |

## STATUS INFORMATION \*\*

Version: 66.0

Date Created: 07/31/91 08:49

Date Last Updated: 02/19/96 02:10

Number of elements: 15

Number of lines: 15

# of lines calibrated: 0

# of lines standardized: 15

02/19/96 02:29 - 02/19/96 02:35

Data collection mode: Spectrum Shifter &lt;4 positions&gt;

Approx. time for analysis 1.8 mins.

Protection status: Un-protected

## METHOD INFORMATION \*\*

Sample Introduction Device: Normal

Calibration Mode: Concentration

## Default Setup:

Number of Repeats : 3

Flush Time (sec) : 50.0

Auto-Increment Sample Names? No

Auto-store Analysis Data? Yes

Auto-store Stdzn Data? Yes

Store Individual Repeats? Yes

Auto-print Analysis Data? Yes

Auto-print Stdzn Report : +Readback

Condensed Print Format? No

## Default File Names:

Analysis Data File : PSC219B

Calibration Data File : PS0219B

Calibration Stds Table : PS0219B

Autosampler Table : COE

Sample Limits Table : LR846

Blank Limits Table : MB846

QC Check Table : CCV

## INTERNAL STANDARDS INFORMATION \*\*

| #                                                  | Elem Symbol | Wavelength | Pre-integration | Integration | Used? |
|----------------------------------------------------|-------------|------------|-----------------|-------------|-------|
| 1                                                  | Time        |            | 0               | 5.0         | Yes   |
| Ratio Constant/Intensity Multiplication Factor: .1 |             |            |                 |             |       |
| 2                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 3                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 4                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 5                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 6                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 7                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |

## OUTPUT INFORMATION \*\*

Output Mode: Concentration  
Override Print Limits? Yes  
Override Significant Figures? No  
Apply Background Correction? Yes  
Apply Blank Subtraction? No  
Limits Table: LR846 Check? Yes  
Correction Factor: 1

Report to:  
Screen Avgs  
Printer Avgs, Stats, Reps, Errs, Units

## PLASMA INFORMATION \*\*

## Gas Flow Rates

Torch gas flow : High Flow  
Auxiliary gas flow: Medium (1.0 L/min)

## Peristaltic Pump Parameters

Flush Pump Rate (RPM): 100  
Relaxation time (sec): 0  
Pump Tubing type : Tygon-Orange

## Plasma Parameters

|                           | Group<br>#1 | Group<br>#2 | Group<br>#3 | Group<br>#4 | Special<br>Group |
|---------------------------|-------------|-------------|-------------|-------------|------------------|
| Approximate RF Power (W): | 1150        | 1350        | 950         | 1750        | 1150             |
| Analysis Pump Rate (RPM): | 100         | 100         | 100         | 100         | 100              |
| Nebulizer Pressure (PSI): | 30          | 30          | 30          | 30          | 30               |

Method: COE

Element Information Mon 02-19-96 04:23:30 PM

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| Element:            | Ag       | Al        | As       | Ba       | Be       |
|---------------------|----------|-----------|----------|----------|----------|
| Wavelength:         | 328.068  | 308.215/2 | 193.696  | 493.409  | 313.042  |
| Element Name:       | Ag3280   | Al3082    | As1936   | Ba4934   | Be3130   |
| Line Switch Conc:   | 0        | 0         | 0        | 0        | 0        |
| Peak SS Offset:     | 0        | 0         | 0        | 0        | 0        |
| Timing Group No.:   | 1        | 1         | 1        | 1        | 1        |
| Print Limit Low:    | 0        | 0         | 0        | 0        | 0        |
| Print Limit High:   | 0        | 0         | 0        | 0        | 0        |
| Significant Figrs:  | 4        | 4         | 4        | 4        | 4        |
| Print Units:        | ppb      | ppb       | ppb      | ppb      | ppb      |
| BKG Low SS Offset:  | NONE     | NONE      | NONE     | NONE     | -15      |
| BKG High SS Offset: | 15       | 15        | 15       | 15       | NONE     |
| BKG Element Name:   | --n/a--  | --n/a--   | --n/a--  | --n/a--  | --n/a--  |
| BKG Factor:         | --n/a--  | --n/a--   | --n/a--  | --n/a--  | --n/a--  |
| Stdz. Method:       | Multiple | Multiple  | Multiple | Multiple | Multiple |
| Std #1 (High) Name: | S0       | S0        | S0       | S0       | S0       |
| Conc/Sig:           | 0        | 0         | 0        | 0        | 0        |
| Std #2 (Low) Name:  | S1A      | S1A       | S2A      | S1A      | S1A      |
| Conc/Sig:           | 250      | 2500      | 5000     | 2500     | 125      |
| Std #3 Name:        | S1B      | S1B       | S2B      | S1B      | S1B      |
| Conc:               | 500      | 5000      | 10000    | 5000     | 250      |
| Std #4 Name:        | S1       | S1        | S2       | S1       | S1       |
| Conc:               | 1000     | 10000     | 20000    | 10000    | 500      |
| Std #5 Name:        | --n/a--  | --n/a--   | --n/a--  | --n/a--  | --n/a--  |
| Conc:               | --n/a--  | --n/a--   | --n/a--  | --n/a--  | --n/a--  |
| Y - intercept:      | -5.59381 | -39.1307  | -11.5346 | -.305463 | -.67435  |
| Slope:              | 279.18   | 765.752   | 376.4    | 103.169  | 8.06264  |
| Date Standardized:  | 02/19/96 | 02/19/96  | 02/19/96 | 02/19/96 | 02/19/96 |
| Time Standardized:  | 14:29    | 14:29     | 14:35    | 14:29    | 14:29    |
| Offset (A0):        | 0        | 0         | 0        | 0        | 0        |
| Gain (A1):          | 1        | 1         | 1        | 1        | 1        |
| Curvature (A2):     | 0        | 0         | 0        | 0        | 0        |
| Exponent (n):       | 1        | 1         | 1        | 1        | 1        |
| Max. Inflection:    | NONE     | NONE      | NONE     | NONE     | NONE     |
| Date of Fit:        | NO FIT   | NO FIT    | NO FIT   | NO FIT   | NO FIT   |
| Time of Fit:        |          |           |          |          |          |
| Use IECs:           | YES      | YES       | YES      | NO       | YES      |
| Number of IECs:     | 2        | 1         | 3        | 0        | 1        |



Method: COE

## Element Information

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|                    |         |         |        |         |        |
|--------------------|---------|---------|--------|---------|--------|
| Affecting Element: | Fe2599  | V-2924  | Al3082 | --n/a-- | V-2924 |
| k1 factor:         | -.00008 | -.03048 | .0038  | --n/a-- | .00286 |
| k2 factor:         | 0       | 0       | 0      | --n/a-- | 0      |
| use?:              | YES     | YES     | YES    | --n/a-- | YES    |

|                    |        |         |        |         |         |
|--------------------|--------|---------|--------|---------|---------|
| Affecting Element: | V-2924 | --n/a-- | Fe2599 | --n/a-- | --n/a-- |
| k1 factor:         | -.0082 | --n/a-- | .0001  | --n/a-- | --n/a-- |
| k2 factor:         | 0      | --n/a-- | 0      | --n/a-- | --n/a-- |
| use?:              | NO     | --n/a-- | YES    | --n/a-- | --n/a-- |

|                    |         |         |        |         |         |
|--------------------|---------|---------|--------|---------|---------|
| Affecting Element: | --n/a-- | --n/a-- | V-2924 | --n/a-- | --n/a-- |
| k1 factor:         | --n/a-- | --n/a-- | .01617 | --n/a-- | --n/a-- |
| k2 factor:         | --n/a-- | --n/a-- | 0      | --n/a-- | --n/a-- |
| use?:              | --n/a-- | --n/a-- | YES    | --n/a-- | --n/a-- |

|                     |           |         |         |           |         |
|---------------------|-----------|---------|---------|-----------|---------|
| Element:            | Cd        | Cr      | Fe      | Ni        | Pb      |
| Wavelength:         | 228.802/2 | 267.716 | 259.940 | 231.604/2 | 220.353 |
| Element Name:       | Cd2288    | Cr2677  | Fe2599  | Ni2316    | Pb2203  |
| Line Switch Conc:   | 0         | 0       | 0       | 0         | 0       |
| Peak SS Offset:     | 0         | 0       | 0       | 0         | 0       |
| Timing Group No.:   | 1         | 1       | 1       | 1         | 1       |
| Print Limit Low:    | 0         | 0       | 0       | 0         | 0       |
| Print Limit High:   | 0         | 0       | 0       | 0         | 0       |
| Significant Figrs:  | 4         | 4       | 4       | 4         | 4       |
| Print Units:        | ppb       | ppb     | ppb     | ppb       | ppb     |
| BKG Low SS Offset:  | NONE      | -15     | -15     | -15       | -15     |
| BKG High SS Offset: | 15        | NONE    | NONE    | NONE      | NONE    |
| BKG Element Name:   | --n/a--   | --n/a-- | --n/a-- | --n/a--   | --n/a-- |
| BKG Factor:         | --n/a--   | --n/a-- | --n/a-- | --n/a--   | --n/a-- |

|                     |          |          |          |          |          |
|---------------------|----------|----------|----------|----------|----------|
| Stdz. Method:       | Multiple | Multiple | Multiple | Multiple | Multiple |
| Std #1 (High) Name: | S0       | S0       | S0       | S0       | S0       |
| Conc/Sig:           | 0        | 0        | 0        | 0        | 0        |
| Std #2 (Low) Name:  | S1A      | S1A      | S1A      | S1A      | S1A      |
| Conc/Sig:           | 125      | 250      | 2500     | 1000     | 1250     |
| Std #3 Name:        | S1B      | S1B      | S1B      | S1B      | S1B      |
| Conc:               | 250      | 500      | 5000     | 2000     | 2500     |
| Std #4 Name:        | S1       | S1       | S1       | S1       | S1       |
| Conc:               | 500      | 1000     | 10000    | 4000     | 5000     |
| Std #5 Name:        | --n/a--  | --n/a--  | --n/a--  | --n/a--  | --n/a--  |
| Conc:               | --n/a--  | --n/a--  | --n/a--  | --n/a--  | --n/a--  |

Method: COE

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|                    |          |          |          |          |          |
|--------------------|----------|----------|----------|----------|----------|
| Y - intercept:     | -.626792 | -1.74086 | -1.16682 | -2.7714  | -10.5972 |
| Slope:             | 233.918  | 100.313  | 66.9932  | 67.098   | 441.152  |
| Date Standardized: | 02/19/96 | 02/19/96 | 02/19/96 | 02/19/96 | 02/19/96 |
| Time Standardized: | 14:29    | 14:29    | 14:29    | 14:29    | 14:29    |
| Offset (A0):       | 0        | 0        | 0        | 0        | 0        |
| Gain (A1):         | 1        | 1        | 1        | 1        | 1        |
| Curvature (A2):    | 0        | 0        | 0        | 0        | 0        |
| Exponent (n):      | 1        | 1        | 1        | 1        | 1        |
| Max. Inflection:   | NONE     | NONE     | NONE     | NONE     | NONE     |
| Date of Fit:       | NO FIT   | NO FIT   | NO FIT   | NO FIT   | NO FIT   |
| Time of Fit:       |          |          |          |          |          |
| Use IECs:          | YES      | NO       | NO       | NO       | YES      |
| Number of IECs:    | 1        | 0        | 0        | 0        | 1        |
| Affecting Element: | As1936   | --n/a--  | --n/a--  | --n/a--  | A13082   |
| k1 factor:         | .0155    | --n/a--  | --n/a--  | --n/a--  | .0013    |
| k2 factor:         | 0        | --n/a--  | --n/a--  | --n/a--  | 0        |
| use?:              | YES      | --n/a--  | --n/a--  | --n/a--  | YES      |

Method: COE

Element Information Mon 02-19-96 04:23:30 PM

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| Element:            | Sb       | Se       | Tl        | V        | Zn       |
|---------------------|----------|----------|-----------|----------|----------|
| Wavelength:         | 206.838  | 196.026  | 190.864/2 | 292.402  | 213.856  |
| Element Name:       | Sb2068   | Se1960   | Tl1908    | V-2924   | Zn2138   |
| Line Switch Conc:   | 0        | 0        | 0         | 0        | 0        |
| Peak SS Offset:     | 0        | 0        | 0         | 0        | 0        |
| Timing Group No.:   | 1        | 1        | 1         | 1        | 1        |
| Print Limit Low:    | 0        | 0        | 0         | 0        | 0        |
| Print Limit High:   | 0        | 0        | 0         | 0        | 0        |
| Significant Figrs:  | 4        | 4        | 4         | 4        | 4        |
| Print Units:        | ppb      | ppb      | ppb       | ppb      | ppb      |
| BKG Low SS Offset:  | NONE     | -15      | NONE      | NONE     | NONE     |
| BKG High SS Offset: | 15       | NONE     | 15        | 29       | 15       |
| BKG Element Name:   | --n/a--  | --n/a--  | --n/a--   | --n/a--  | --n/a--  |
| BKG Factor:         | --n/a--  | --n/a--  | --n/a--   | --n/a--  | --n/a--  |
| Stdz. Method:       | Multiple | Multiple | Multiple  | Multiple | Multiple |
| Std #1 (High) Name: | S0       | S0       | S0        | S0       | S0       |
| Conc/Sig:           | 0        | 0        | 0         | 0        | 0        |
| Std #2 (Low) Name:  | S1A      | S2A      | S2A       | S1A      | S1A      |
| Conc/Sig:           | 1500     | 5000     | 5000      | 1250     | 500      |
| Std #3 Name:        | S1B      | S2B      | S2B       | S1B      | S1B      |
| Conc:               | 3000     | 10000    | 10000     | 2500     | 1000     |
| Std #4 Name:        | S1       | S2       | S2        | S1       | S1       |
| Conc:               | 6000     | 20000    | 20000     | 5000     | 2000     |
| Std #5 Name:        | --n/a--  | --n/a--  | --n/a--   | --n/a--  | --n/a--  |
| Conc:               | --n/a--  | --n/a--  | --n/a--   | --n/a--  | --n/a--  |
| Y - intercept:      | -3.75218 | 2.76479  | 2.19105   | .723779  | -.909275 |
| Slope:              | 145.73   | 347.766  | 276.756   | 115.058  | 98.436   |
| Date Standardized:  | 02/19/96 | 02/19/96 | 02/19/96  | 02/19/96 | 02/19/96 |
| Time Standardized:  | 14:29    | 14:35    | 14:35     | 14:29    | 14:29    |
| Offset (AC):        | 0        | 0        | 0         | 0        | 0        |
| Gain (A1):          | 1        | 1        | 1         | 1        | 1        |
| Curvature (A2):     | 0        | 0        | 0         | 0        | 0        |
| Exponent (n):       | 1        | 1        | 1         | 1        | 1        |
| Max. Inflection:    | NONE     | NONE     | NONE      | NONE     | NONE     |
| Date of Fit:        | NO FIT   | NO FIT   | NO FIT    | NO FIT   | NO FIT   |
| Time of Fit:        |          |          |           |          |          |
| Use IECs:           | YES      | YES      | YES       | YES      | YES      |
| Number of IECs:     | 3        | 1        | 2         | 1        | 2        |

Method: COE

Element Information

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|                    |        |         |        |         |        |
|--------------------|--------|---------|--------|---------|--------|
| Affecting Element: | As1936 | Fe2599  | Fe2599 | Fe2599  | Fe2599 |
| k1 factor:         | .00008 | -.00026 | .00133 | .000075 | .00013 |
| k2 factor:         | 0      | 0       | 0      | 0       | 0      |
| use?:              | YES    | YES     | YES    | YES     | YES    |

|                    |         |         |        |         |        |
|--------------------|---------|---------|--------|---------|--------|
| Affecting Element: | V-2924  | --n/a-- | V-2924 | --n/a-- | Ni2316 |
| k1 factor:         | -.00843 | --n/a-- | .0018  | --n/a-- | .00395 |
| k2 factor:         | 0       | --n/a-- | 0      | --n/a-- | 0      |
| use?:              | YES     | --n/a-- | YES    | --n/a-- | YES    |

|                    |         |         |         |         |         |
|--------------------|---------|---------|---------|---------|---------|
| Affecting Element: | Ni2316  | --n/a-- | --n/a-- | --n/a-- | --n/a-- |
| k1 factor:         | -.00143 | --n/a-- | --n/a-- | --n/a-- | --n/a-- |
| k2 factor:         | 0       | --n/a-- | --n/a-- | --n/a-- | --n/a-- |
| use?:              | YES     | --n/a-- | --n/a-- | --n/a-- | --n/a-- |

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Method: COE

Standard: S0

| Elem | Ag3280 | Al3082           | As1936 | Ba4934 | Be3130 | Cd2288 | Cr2677 |
|------|--------|------------------|--------|--------|--------|--------|--------|
| Avge | .0107  | .0447            | .0013  | -.0020 | .0807  | -.0053 | -.0093 |
| SDev | .0153  | .0214            | .0231  | .0035  | .0070  | .0061  | .0280  |
| %RSD | 143.2  | 47.88 <u>IEC</u> | 1758.  | 173.2  | 8.707  | 114.6  | 300.3  |

|    |        |       |        |        |       |        |        |
|----|--------|-------|--------|--------|-------|--------|--------|
| #1 | .0107  | .0260 | -.0160 | -.0060 | .0280 | -.0040 | -.0080 |
| #2 | -.0060 | .0400 | -.0080 | .0000  | .0740 | -.0120 | -.0380 |
| #3 | .0240  | .0680 | .0280  | .0000  | .0800 | .0000  | .0130  |

| Elem | Fe2599          | Ni2316 | Pb2203 | Sb2068 | Se1960 | Tl1908 | V-2924           |
|------|-----------------|--------|--------|--------|--------|--------|------------------|
| Avge | .0007           | .0067  | .0167  | -.0900 | .0673  | -.0527 | -.0387           |
| SDev | .0311           | .0297  | .0291  | .0964  | .0546  | .0220  | .0190            |
| %RSD | 4670 <u>IEC</u> | 445.3  | 174.9  | 107.2  | 81.09  | 41.83  | 49.16 <u>IEC</u> |

|    |        |        |        |        |       |        |        |
|----|--------|--------|--------|--------|-------|--------|--------|
| #1 | .0040  | -.0260 | .0400  | -.0500 | .1260 | -.0730 | -.0390 |
| #2 | -.0320 | .0140  | -.0160 | -.2000 | .0130 | -.0380 | -.0580 |
| #3 | .0300  | .0320  | .0260  | -.0200 | .0520 | -.0420 | -.0200 |

COE-HOT  
QAS  
SW846

1 COPY

NO RETURN

Metreved  
updated

PMP  
02-20-96

PS0220B IC3.2  
96L0322- Baten  
96021964-023  
-024

PMP  
2-20-96

Method: COE

Standard: S1A

|      |        |        |        |        |        |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|
| Elem | Ag3280 | Al3082 | Ba4934 | Be3130 | Cd2286 | Cr2677 | Fe2599 |
| Avge | .9527  | 3.329  | 24.43  | 16.45  | .5527  | 2.637  | 39.62  |
| SDev | .0129  | .019   | .24    | .14    | .0110  | .040   | .27    |
| %RSD | 1.350  | .5709  | .9624  | .8669  | 1.993  | 1.517  | .6722  |
| #1   | .9380  | 3.310  | 24.22  | 16.32  | .5600  | 2.636  | 39.39  |
| #2   | .9620  | 3.330  | 24.69  | 16.60  | .5580  | 2.678  | 39.91  |
| #3   | .9580  | 3.348  | 24.40  | 16.43  | .5400  | 2.593  | 39.55  |
| Elem | Ni2316 | Pb2203 | Sb2068 | V-2924 |        |        |        |
| Avge | 15.92  | 3.034  | 10.92  | 11.43  |        |        |        |
| SDev | .07    | .031   | .14    | .07    |        |        |        |
| %RSD | .4610  | 1.023  | 1.284  | .5834  |        |        |        |
| #1   | 15.93  | 3.038  | 10.90  | 11.39  |        |        |        |
| #2   | 15.99  | 3.052  | 11.07  | 11.52  |        |        |        |
| #3   | 15.94  | 3.052  | 10.79  | 11.44  |        |        |        |

Method: COE

Standard: S1B

|      |        |        |        |        |        |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|
| Elem | Ag3290 | Al3082 | Ba4934 | Be3130 | Cd2288 | Cr2677 | Fe2599 |
| Avge | 1.848  | 6.553  | 47.70  | 32.02  | 1.087  | 5.123  | 77.00  |
| SDev | .017   | .046   | .51    | .25    | .017   | .031   | .61    |
| %RSD | .9435  | .7029  | 1.063  | .7842  | 1.586  | .6078  | .7936  |
| #1   | 1.828  | 6.508  | 47.15  | 31.77  | 1.084  | 5.090  | 76.36  |
| #2   | 1.860  | 6.600  | 48.16  | 32.27  | 1.106  | 5.126  | 77.57  |
| #3   | 1.856  | 6.550  | 47.78  | 32.03  | 1.072  | 5.152  | 77.07  |
| Elem | Ni2316 | Pb2203 | Sb2068 | V-2924 |        |        |        |
| Avge | 30.77  | 5.939  | 21.17  | 22.31  |        |        |        |
| SDev | .29    | .033   | .12    | .19    |        |        |        |
| %RSD | .9565  | .5598  | .5756  | .8371  |        |        |        |
| #1   | 30.43  | 5.934  | 21.03  | 22.10  |        |        |        |
| #2   | 30.91  | 5.974  | 21.25  | 22.46  |        |        |        |
| #3   | 30.96  | 5.908  | 21.23  | 22.36  |        |        |        |

Method: COE

Standard: S1

|      |        |        |        |        |        |        |        |
|------|--------|--------|--------|--------|--------|--------|--------|
| Elem | Ag3280 | Al3082 | Ba4934 | Be3130 | Cd2288 | Cr2677 | Fe2599 |
| Avge | 3.662  | 13.19  | 96.83  | 64.55  | 2.169  | 10.26  | 153.9  |
| SDev | .028   | .1     | .70    | .31    | .010   | .05    | .9     |
| %RSD | .7704  | .7482  | .7181  | .4345  | .4731  | .4885  | .5751  |
| #1   | 3.636  | 13.08  | 96.03  | 64.20  | 2.178  | 10.21  | 152.9  |
| #2   | 3.658  | 13.20  | 97.22  | 64.69  | 2.158  | 10.31  | 154.4  |
| #3   | 3.692  | 13.28  | 97.25  | 64.77  | 2.172  | 10.26  | 154.5  |
| Elem | Ni2316 | Pb2203 | Sb2068 | V-2924 |        |        |        |
| Avge | 61.33  | 11.80  | 42.49  | 44.88  |        |        |        |
| SDev | .27    | .04    | .42    | .27    |        |        |        |
| %RSD | .4384  | .3502  | .9988  | .6081  |        |        |        |
| #1   | 61.05  | 11.76  | 42.03  | 44.56  |        |        |        |
| #2   | 61.37  | 11.85  | 42.57  | 45.01  |        |        |        |
| #3   | 61.58  | 11.80  | 42.87  | 45.06  |        |        |        |



Method: COE

Standard: S2A

| Elem | As1936 | Se1960 | Tl1908 |
|------|--------|--------|--------|
| Avge | 13.57  | 14.75  | 18.58  |
| SDev | .06    | .05    | .09    |
| CRSD | .4058  | .3152  | .5089  |

|    |       |       |       |
|----|-------|-------|-------|
| #1 | 13.54 | 14.71 | 18.53 |
| #2 | 13.64 | 14.80 | 18.51 |
| #3 | 13.55 | 14.73 | 18.68 |

Method: COE

Standard: S2B

|      |        |        |        |
|------|--------|--------|--------|
| Elem | As1936 | Se1960 | Tl1908 |
| Avge | 27.66  | 29.89  | 37.58  |
| SDev | .32    | .19    | .26    |
| %RSD | 1.144  | .6279  | .6790  |
| #1   | 27.48  | 30.05  | 37.34  |
| #2   | 28.02  | 29.93  | 37.85  |
| #3   | 27.47  | 29.69  | 37.55  |

Method: COE

Standard: S2

| Elem | As1936 | Se1960 | Tl1908 |
|------|--------|--------|--------|
| Avge | 55.06  | 59.54  | 74.47  |
| SDev | .36    | .43    | .24    |
| %RSD | .6539  | .7148  | .3280  |

|    |       |       |       |
|----|-------|-------|-------|
| #1 | 55.42 | 60.00 | 74.75 |
| #2 | 55.06 | 59.45 | 74.37 |
| #3 | 54.70 | 59.16 | 74.29 |

Method: COE

Slope = Conc(SIR)/IR

| Element | Wavelength | High std | Low std   | Slope   | Y-intercept | Date Standardized |
|---------|------------|----------|-----------|---------|-------------|-------------------|
| Ag3280  | 328.068    | Multiple | Standards | 270.220 | -2.91378    | 02/20/96 06:58:13 |
| Al3082  | 308.215    | Multiple | Standards | 751.753 | -33.5941    | 02/20/96 06:58:13 |
| As1936  | 193.696    | Multiple | Standards | 364.384 | -.173891    | 02/20/96 07:04:36 |
| Ba4934  | 493.409    | Multiple | Standards | 103.460 | .077327     | 02/20/96 06:58:13 |
| Be3130  | 313.042    | Multiple | Standards | 7.96021 | -.651426    | 02/20/96 06:58:13 |
| Cd2288  | 228.802    | Multiple | Standards | 227.562 | 1.20062     | 02/20/96 06:58:13 |
| Cr2677  | 267.716    | Multiple | Standards | 96.4082 | .867927     | 02/20/96 06:58:13 |
| Fe2599  | 259.940    | Multiple | Standards | 64.3303 | -.346711    | 02/20/96 06:58:13 |
| Ni2316  | 231.604    | Multiple | Standards | 64.3498 | -.581742    | 02/20/96 06:58:13 |
| Pb2203  | 220.353    | Multiple | Standards | 421.300 | -7.14030    | 02/20/96 06:58:13 |
| Sb2068  | 206.838    | Multiple | Standards | 138.291 | 12.2356     | 02/20/96 06:58:13 |
| Se1960  | 196.026    | Multiple | Standards | 337.359 | -22.4428    | 02/20/96 07:04:36 |
| Tl1908  | 190.864    | Multiple | Standards | 267.505 | 14.1321     | 02/20/96 07:04:36 |
| V-2924  | 292.432    | Multiple | Standards | 110.669 | 4.15358     | 02/20/96 06:58:13 |

Method: COE

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Ag3280  | 328.068    | S0       | .000000             | -.031434               | .031434                |
|         |            | S1A      | 250.000             | 254.516                | -4.51576               |
|         |            | S1B      | 500.000             | 496.453                | 3.54736                |
|         |            | S1       | 1000.00             | 986.632                | 13.3683                |

CorCoef: 0.99996 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Al3082  | 308.215    | S0       | .000000             | -.015825               | .015825                |
|         |            | S1A      | 2500.00             | 2469.24                | 30.7563                |
|         |            | S1B      | 5000.00             | 4892.40                | 107.604                |
|         |            | S1       | 10000.0             | 9381.03                | 118.969                |

CorCoef: 0.99998 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| As1936  | 193.696    | S0       | .000000             | .311955                | -.311955               |
|         |            | S2A      | 5000.00             | 4945.49                | 54.5073                |
|         |            | S2B      | 10000.0             | 10077.5                | -77.4814               |
|         |            | S2       | 20000.0             | 20063.1                | -63.0684               |

CorCoef: 0.99999 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Ba4934  | 493.409    | S0       | .000000             | -.129093               | .129093                |
|         |            | S1A      | 2500.00             | 2528.09                | -28.0933               |
|         |            | S1B      | 5000.00             | 4934.71                | 65.2852                |
|         |            | S1       | 10000.0             | 10018.2                | -18.1973               |

CorCoef: 0.99995 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Be3130  | 313.042    | S0       | .000000             | -.009302               | .009302                |
|         |            | S1A      | 125.000             | 130.299                | -5.29938               |
|         |            | S1B      | 250.000             | 254.245                | -4.24518               |
|         |            | S1       | 500.000             | 513.212                | -13.2121               |

CorCoef: 0.99997 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Cd2288  | 228.802    | S0       | .000000             | -.013047               | .013047                |
|         |            | S1A      | 125.000             | 126.967                | -1.96677               |
|         |            | S1B      | 250.000             | 248.637                | 1.36319                |
|         |            | S1       | 500.000             | 494.859                | 5.14069                |

CorCoef: 0.99998 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Cr2677  | 267.716    | S0       | .000000             | -.031882               | .031882                |
|         |            | S1A      | 250.000             | 255.128                | -5.12848               |
|         |            | S1B      | 500.000             | 494.735                | 5.26501                |
|         |            | S1       | 1000.00             | 990.016                | 9.98395                |

CorCoef: 0.99996 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Fe2599  | 259.940    | S0       | .000000             | -.030824               | .030824                |
|         |            | S1A      | 2500.00             | 2548.34                | -48.3352               |
|         |            | S1B      | 5000.00             | 4953.05                | 46.9536                |
|         |            | S1       | 10000.0             | 9900.56                | 99.4355                |

CorCoef: 0.99997 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Ni2316  | 231.604    | S0       | .000000             | -.152743               | .152743                |
|         |            | S1A      | 1000.00             | 1023.82                | -23.8244               |
|         |            | S1B      | 2000.00             | 1979.25                | 20.7524                |
|         |            | S1       | 4000.00             | 3946.21                | 53.7932                |

CorCoef: 0.99995 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Pb2203  | 220.353    | S0       | .000000             | -.119138               | .119138                |
|         |            | S1A      | 1250.00             | 1271.08                | -21.0822               |
|         |            | S1B      | 2500.00             | 2494.82                | 5.18286                |
|         |            | S1       | 5000.00             | 4965.04                | 34.9629                |

CorCoef: 0.99998 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Sb2068  | 206.838    | S0       | .000000             | -.210548               | .210548                |
|         |            | S1A      | 1500.00             | 1522.19                | -22.1871               |
|         |            | S1B      | 3000.00             | 2939.53                | 60.4241                |
|         |            | S1       | 6000.00             | 5888.49                | 111.510                |

CorCoef: 0.99995 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Se1960  | 196.026    | S0       | .000000             | .272652                | -.272652               |
|         |            | S2A      | 5000.00             | 4953.37                | 46.6289                |
|         |            | S2B      | 10000.0             | 10061.7                | -61.6543               |
|         |            | S2       | 20000.0             | 20063.2                | -63.2109               |

CorCoef: 0.99999 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| Tl1908  | 190.864    | S0       | .000000             | .043567                | -.043567               |
|         |            | S2A      | 5000.00             | 4983.12                | 16.8799                |
|         |            | S2B      | 10000.0             | 10066.4                | -66.4229               |
|         |            | S2       | 20000.0             | 19934.7                | 65.3301                |

CorCoef: 0.99998 ✓

| Element | Wavelength | Standard | Known Concentration | Measured Concentration | Residual Concentration |
|---------|------------|----------|---------------------|------------------------|------------------------|
| V-2924  | 292.402    | S0       | .000000             | -.125611               | .125611                |
|         |            | S1A      | 1250.00             | 1271.53                | -21.5311               |
|         |            | S1B      | 2500.00             | 2472.80                | 27.1973                |
|         |            | S1       | 5000.00             | 4970.52                | 29.4795                |

CorCoef: 0.99997 ✓

## Analysis Report

QC Standard

Tue 02-20-96 07:10:21 PM

page 1

Method: COE

Sample Name: STD1 ✓

Operator: PMP

Run Time: 02/20/96 19:08:06

Comment:

Mode: CONC Corr. Factor: 1

| Elem  | Ag3280 | Al3082 | As1936 | Ba4934 | Be3130 | Cd2283 | Cr2677 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avge  | 982.4  | 10120. | .5420  | 9874.  | 481.9  | 492.7  | 985.0  |
| SDev  | 5.3    | 60.    | 7.754  | 71.    | 2.9    | 3.2    | 7.0    |
| %RSD  | .5351  | .5967  | 1431.  | .7235  | .6069  | .6585  | .7058  |

|    |       |        |        |       |       |       |       |
|----|-------|--------|--------|-------|-------|-------|-------|
| #1 | 977.9 | 10060. | -7.159 | 9807. | 479.5 | 492.8 | 979.2 |
| #2 | 981.2 | 10120. | .4371  | 9864. | 481.0 | 495.9 | 983.1 |
| #3 | 988.2 | 10180. | 8.348  | 9949. | 485.1 | 489.4 | 992.7 |

|        |           |           |         |           |           |           |           |
|--------|-----------|-----------|---------|-----------|-----------|-----------|-----------|
| Errors | QC Pass ✓ | QC Pass ✓ | NOCHECK | QC Pass ✓ | QC Pass ✓ | QC Pass ✓ | QC Pass ✓ |
| Value  | 1000.     | 10000.    |         | 10000.    | 500.0     | 500.0     | 1000.     |
| Range  | 5.000     | 5.000     |         | 5.000     | 5.000     | 5.000     | 5.000     |

| Elem  | Fe2599 | Ni2316 | Pb2203 | Sb2068 | Se1960 | Tl1908 | V-2924 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avge  | 9855.  | 3943.  | 4942.  | 5954.  | -24.38 | 32.79  | 4940.  |
| SDev  | 54.    | 6.     | 14.    | 68.    | .78    | 14.86  | 26.    |
| %RSD  | .5477  | .1611  | .2781  | 1.142  | 3.201  | 45.33  | .5257  |

|    |       |       |       |       |        |       |       |
|----|-------|-------|-------|-------|--------|-------|-------|
| #1 | 9804. | 3936. | 4932. | 5912. | -23.94 | 17.92 | 4920. |
| #2 | 9850. | 3946. | 4936. | 5918. | -25.28 | 32.32 | 4931. |
| #3 | 9911. | 3948. | 4957. | 6032. | -23.91 | 47.65 | 4970. |

|        |           |           |           |           |         |         |           |
|--------|-----------|-----------|-----------|-----------|---------|---------|-----------|
| Errors | QC Pass ✓ | QC Pass ✓ | QC Pass ✓ | QC Pass ✓ | NOCHECK | NOCHECK | QC Pass ✓ |
| Value  | 10000.    | 4000.     | 5000.     | 6000.     |         |         | 5000.     |
| Range  | 5.000     | 5.000     | 5.000     | 5.000     |         |         | 5.000     |

Method: COE

Sample Name: STD2 ✓

Operator: PMP

Run Time: 02/20/96 19:11:39

Comment:

Mode: CONC Corr. Factor: 1

| Elem  | Ag3280 | Al3082 | As1936 | Ba4934 | Be3130 | Cd2283 | Cr2677 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 3.034  | 498.5  | 19870. | .4917  | .1083  | 9.122  | -6.845 |
| SDev  | 4.083  | 13.8   | 280.   | .8277  | .0642  | 3.366  | 2.416  |
| %RSD  | 134.6  | 2.778  | 1.408  | 168.3  | 59.33  | 36.90  | 35.30  |

|    |        |       |          |        |       |       |        |
|----|--------|-------|----------|--------|-------|-------|--------|
| #1 | 6.820  | 511.1 | 20180.   | 1.319  | .0598 | 5.316 | -6.652 |
| #2 | -1.293 | 483.7 | 19650.   | -.3360 | .1811 | 10.34 | -4.531 |
| #3 | 3.574  | 500.5 | 19770. ✓ | .4917  | .0838 | 11.71 | -9.351 |

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Errors | NOCHECK | NOCHECK | QC Pass | NOCHECK | NOCHECK | NOCHECK | NOCHECK |
| Value  |         |         | 20000.  |         |         |         |         |
| Range  |         |         | 5.000   |         |         |         |         |

| Elem  | Fe2599 | Ni2316 | Pb2203 | Sb2068 | Se1960 | Tl1903 | V-2924 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 2.312  | .5766  | -13.09 | 92.50  | 19800. | 19310. | 7.694  |
| SDev  | 1.629  | 4.359  | 20.89  | 18.42  | 243.   | 211.   | 1.232  |
| %RSD  | 70.46  | 756.0  | 159.3  | 19.91  | 1.228  | 1.063  | 16.02  |

|    |       |        |        |       |        |        |       |
|----|-------|--------|--------|-------|--------|--------|-------|
| #1 | 1.069 | -2.255 | -1.904 | 113.7 | 20080. | 20050. | 6.587 |
| #2 | 4.156 | 5.596  | -.1273 | 83.88 | 19650. | 19670. | 7.472 |
| #3 | 1.712 | -1.611 | -37.19 | 79.97 | 19660. | 19720. | 9.022 |

|        |         |         |         |         |           |           |         |
|--------|---------|---------|---------|---------|-----------|-----------|---------|
| Errors | NOCHECK | NOCHECK | NOCHECK | NOCHECK | QC Pass ✓ | QC Pass ✓ | NOCHECK |
| Value  |         |         |         |         | 20000.    | 20000.    |         |
| Range  |         |         |         |         | 5.000     | 5.000     |         |



## Analysis Report

Blank Sample

Tue 02-20-96 07:19:16 PM

Page 1

Method: COE

Sample Name: ICB ✓

Operator: PMP

Run Time: 02/20/96 19:17:02

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avg    | 1.772   | 15.39   | 5.039   | .6986   | -.0067  | .0656   | 1.061   |
| SDev   | 2.722   | 11.28   | 5.515   | .7461   | .0186   | 2.312   | .695    |
| %RSD   | 153.7   | 73.26   | 109.4   | 106.8   | 276.6   | 3525.   | 65.54   |
| #1     | 4.656   | 24.05   | 4.761   | 1.526   | -.0280  | 1.587   | .4823   |
| #2     | -.7525  | 2.642   | 10.69   | .0778   | .0061   | -2.595  | .8679   |
| #3     | 1.411   | 19.48   | -.3310  | .4917   | .0017   | 1.205   | 1.832   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 13.00   | 111.8   | 86.59   | 8.510   | .4600   | 10.09   | 14.99   |
| Low    | -13.00  | -111.8  | -86.59  | -8.510  | -.4600  | -10.09  | -14.99  |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avg    | .8112   | -2.426  | -18.91  | 17.11   | -42.23  | 11.27   | 4.596   |
| SDev   | .5608   | 5.430   | 2.23    | 19.11   | 14.97   | 20.14   | .798    |
| %RSD   | 69.13   | 223.8   | 11.80   | 111.7   | 35.45   | 178.7   | 17.36   |
| #1     | 1.069   | -4.185  | -21.44  | 37.46   | -58.20  | 1.282   | 4.317   |
| #2     | 1.197   | 3.665   | -18.05  | -.4554  | -28.51  | 34.45   | 3.710   |
| #3     | .1679   | -6.759  | -17.23  | 14.32   | -39.99  | -1.928  | 5.259   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 14.73   | 26.04   | 96.86   | 81.16   | 116.5   | 102.7   | 12.04   |
| Low    | -14.73  | -26.04  | -96.86  | -81.16  | -116.5  | -102.7  | -12.04  |

## Analysis Report

## QC Standard

Tue 02-20-96 07:21:33 PM

page 1

Method: COE

Sample Name: ISB

Operator: PMP

Run Time: 02/20/96 19:19:19

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2283  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avg    | 1023.   | 508300. | 949.7   | 477.9   | 453.2   | 958.2   | 458.5   |
| SDev   | 8.      | 5587.   | 47.0    | 5.5     | 4.4     | 10.0    | 4.1     |
| %RSD   | .8304   | 1.099   | 4.952   | 1.148   | .9775   | 1.045   | .8864   |
| #1     | 1032.   | 514500. | 966.1   | 483.9   | 458.2   | 968.9   | 463.2   |
| #2     | 1015.   | 503600. | 986.4   | 473.1   | 449.7   | 949.0   | 456.1   |
| #3     | 1023.   | 506900. | 896.7   | 476.6   | 451.7   | 956.7   | 456.3   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 1000.   | 500000. | 1000.   | 500.0   | 500.0   | 1000.   | 500.0   |
| Range  | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2062  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avg    | 185000. | 891.6   | 954.4   | 1002.   | 915.8   | 987.8   | 475.0   |
| SDev   | 1409.   | 12.3    | 10.8    | 1.      | 44.1    | 36.4    | 3.3     |
| %RSD   | .7617   | 1.379   | 1.134   | .9551   | 4.819   | 3.682   | .6925   |
| #1     | 186500. | 903.8   | 948.6   | 1013.   | 904.5   | 996.8   | 473.6   |
| #2     | 183700. | 891.8   | 947.6   | 994.5   | 964.5   | 1019.   | 473.0   |
| #3     | 184800. | 879.2   | 966.8   | 1002.   | 878.5   | 947.7   | 473.2   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 200000. | 1000.   | 1000.   | 1000.   | 1000.   | 1000.   | 500.0   |
| Range  | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   |

## Analysis Report

QC Standard

Tue 02-20-96 07:26:55 PM

page 1

Method: COE

Sample Name: CRI ✓

Operator: PMP

Run Time: 02/20/96 19:24:41

Comment:

Mode: CONC Corr. Factor: 1

|       |        |        |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Elem  | Ag3280 | Al3082 | As1936 | Ba4934 | Be3130 | Cd2288 | Cr2677 |
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 20.90  | 198.1  | 407.2  | 204.4  | 9.667  | 9.708  | 19.76  |
| SDev  | 4.72   | 3.1    | 21.5   | 1.7    | .038   | 2.172  | 1.74   |
| %RSD  | 22.56  | 1.574  | 5.280  | .8246  | .3921  | 22.37  | 8.780  |

|    |       |       |       |       |       |       |       |
|----|-------|-------|-------|-------|-------|-------|-------|
| #1 | 24.14 | 198.1 | 428.1 | 202.4 | 9.657 | 9.102 | 21.50 |
| #2 | 23.06 | 201.2 | 408.4 | 205.5 | 9.635 | 12.12 | 18.03 |
| #3 | 15.49 | 194.9 | 385.1 | 205.1 | 9.709 | 7.904 | 19.76 |

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 20.00   | 200.0   | 400.0   | 200.0   | 10.00   | 10.00   | 20.00   |
| Range  | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   |

|       |        |        |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|--------|--------|
| Elem  | Fe2599 | Ni2316 | Pb2203 | Sb2068 | Se1960 | Tl1908 | V-2924 |
| Units | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    | ppb    |
| Avg   | 209.7  | 83.54  | 89.55  | 115.3  | 397.7  | 422.9  | 103.7  |
| SDev  | 1.8    | 3.62   | 8.07   | 6.0    | 12.9   | 8.1    | 2.1    |
| %RSD  | .8695  | 4.336  | 9.015  | 5.229  | 3.247  | 1.915  | 2.035  |

|    |       |       |       |       |       |       |       |
|----|-------|-------|-------|-------|-------|-------|-------|
| #1 | 210.8 | 83.97 | 96.83 | 108.6 | 393.9 | 413.9 | 103.5 |
| #2 | 207.6 | 79.73 | 90.94 | 117.0 | 412.1 | 425.6 | 105.9 |
| #3 | 210.7 | 86.93 | 80.87 | 120.3 | 387.2 | 429.4 | 101.7 |

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 200.0   | 80.00   | 100.0   | 120.0   | 400.0   | 400.0   | 100.0   |
| Range  | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   | 50.00   |

## Analysis Report

Tue 02-20-96 07:32:16 PM

page 1

Method: COE

Sample Name: 9602L964-023

Operator: PMP

Run Time: 02/20/96 19:30:02

Comment:

Mode: CONC Corr. Factor: 1

|        |          |          |          |          |          |          |          |
|--------|----------|----------|----------|----------|----------|----------|----------|
| Elem   | Ag3280 ✓ | Al3082   | As1936 ✓ | Ba4934 ✓ | Be3130 ✓ | Cd2238 ✓ | Cr2677 ✓ |
| Units  | ppb ✓    | ppb      | ppb ✓    | ppb ✓    | ppb ✓    | ppb ✓    | ppb ✓    |
| Avge   | 3.465    | 5184.    | .4910    | 158.6    | .1309    | 10.90    | 295.7    |
| SDev   | 5.681    | 22.      | 12.72    | 1.1      | .0268    | 2.60     | 2.2      |
| %RSD   | 164.0    | .4282    | 2590.    | .6905    | 20.49    | 23.82    | .7520    |
| #1     | 9.054    | 5191.    | 14.54    | 159.0    | .1598    | 13.73    | 293.9    |
| #2     | -2.304   | 5202.    | -10.23   | 159.4    | .1067    | 8.631    | 298.2    |
| #3     | 3.644    | 5159.    | -2.844   | 157.3    | .1263    | 10.34    | 294.9    |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 10000.   | 1000000. | 100000.  | 100000.  | 2000.    | 25000.   | 50000.   |
| Low    | -18.00   | -111.8   | -86.59   | -8.510   | -.4600   | -10.08   | -14.99   |
| Elem   | Fe2599   | Ni2316 ✓ | Pb2203 ✓ | Sb2068 ✓ | Se1960 ✓ | Tl1908 ✓ | V-2924   |
| Units  | ppb      | ppb ✓    | ppb ✓    | ppb ✓    | ppb ✓    | ppb ✓    | ppb      |
| Avge   | 880.5    | 56.99 ✓  | 167.4    | 119.9    | -20.19   | 22.92    | 14.19    |
| SDev   | 4.7      | 5.29     | 6.4      | 14.7     | 20.65    | 23.54    | 2.09     |
| %RSD   | .5373    | 9.290    | 3.835    | 12.25    | 102.3    | 102.7    | 14.74    |
| #1     | 881.6    | 55.92    | 174.4    | 104.5    | 1.401    | 1.698    | 14.93    |
| #2     | 884.6    | 62.74    | 161.8    | 133.8    | -22.21   | 48.24    | 11.83    |
| #3     | 875.3    | 52.31    | 166.0    | 121.3    | -39.76   | 18.82    | 15.82    |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 250000.  | 200000.  | 250000.  | 120000.  | 100000.  | 100000.  | 25000.   |
| Low    | -14.73   | -26.04   | -96.86   | -81.16   | -116.5   | -102.7   | -12.04   |

## Analysis Report

Tue 02-20-96 07:35:46 PM

page 1

Method: COE

Sample Name: 9602L964-024

Operator: PMP

Run Time: 02/20/96 19:33:32

Comment:

Mode: CONC Corr. Factor: 1

|        |          |          |          |          |          |          |          |
|--------|----------|----------|----------|----------|----------|----------|----------|
| Elem   | Ag3280 ✓ | Al3082   | As1936 ✓ | Ba4934 ✓ | Be3130 ✓ | Cd2288 ✓ | Cr2677 ✓ |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avge   | 3.584    | 625.0    | .8505    | 26.43    | .0334    | .5815    | 9.737    |
| SDev   | .937     | 18.1     | 5.776    | .43      | .0064    | 1.798    | 1.767    |
| %RSD   | 26.14    | 2.898    | 679.2    | 1.630    | 19.07    | 309.2    | 18.15    |
| #1     | 4.125    | 604.1    | -4.643   | 26.56    | .0261    | 2.633    | 7.809    |
| #2     | 4.125    | 634.7    | .3204    | 25.94    | .0371    | -.1694   | 10.12    |
| #3     | 2.503    | 636.3    | 6.874    | 26.77    | .0371    | -.7195   | 11.28    |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 10000.   | 1000000. | 100000.  | 100000.  | 2000.    | 25000.   | 50000.   |
| Low    | -18.00   | -111.8   | -86.59   | -3.510   | -.4600   | -10.08   | -14.99   |
| Elem   | Fe2599   | Ni2316 ✓ | Pb2203 ✓ | Sb2068 ✓ | Se1960 ✓ | Tl1908 ✓ | V-2924   |
| Units  | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      | ppb      |
| Avge   | 123.6    | 5.381    | 51.73    | 99.73    | -25.11   | 6.115    | 3.185    |
| SDev   | 1.0      | 5.792    | 13.20    | 15.03    | 20.45    | 24.41    | .894     |
| %RSD   | .8133    | 107.6    | 25.52    | 15.13    | 31.46    | 399.1    | 28.08    |
| #1     | 122.4    | -1.225   | 49.24    | 93.43    | -36.58   | 29.48    | 2.152    |
| #2     | 124.1    | 9.586    | 39.96    | 116.9    | -1.494   | 8.075    | 3.701    |
| #3     | 124.2    | 7.784    | 66.01    | 83.77    | -37.25   | -19.21   | 3.701    |
| Errors | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  | LC Pass  |
| High   | 250000.  | 200000.  | 250000.  | 120000.  | 100000.  | 100000.  | 25000.   |
| Low    | -14.73   | -26.04   | -96.86   | -81.16   | -116.5   | -102.7   | -12.04   |

## Analysis Report

QC Standard

Tue 02-20-96 07:47:09 PM

page 1

Method: COE

Sample Name: ISB ✓

Operator: PMP

Run Time: 02/20/96 19:44:55

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 1028.   | 510300. | 956.0   | 482.3   | 452.4   | 956.3   | 457.9   |
| SDev   | 14.     | 5399.   | 45.2    | 5.5     | 4.3     | 3.2     | 3.6     |
| %RSD   | 1.368   | 1.058   | 4.733   | 1.147   | .9423   | .3349   | .7836   |
| #1     | 1021.   | 507500. | 975.3   | 479.7   | 450.4   | 955.1   | 457.5   |
| #2     | 1044.   | 516500. | 988.3   | 483.6   | 457.3   | 959.9   | 461.7   |
| #3     | 1019.   | 506800. | 904.3   | 478.5   | 449.6   | 953.9   | 454.6   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 1000.   | 500000. | 1000.   | 500.0   | 500.0   | 1000.   | 500.0   |
| Range  | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2069  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 185200. | 894.0   | 917.9   | 1010.   | 898.8   | 979.0   | 477.5   |
| SDev   | 1817.   | 15.9    | 16.4    | 21.     | 3.4     | 10      | 3.4     |
| %RSD   | .9810   | 1.790   | 1.792   | 2.032   | .9370   | 1.017   | .7224   |
| #1     | 184200. | 875.7   | 922.4   | 1001.   | 906.6   | 973.7   | 477.0   |
| #2     | 187300. | 905.1   | 931.7   | 995.7   | 889.9   | 972.8   | 481.2   |
| #3     | 134100. | 901.1   | 899.7   | 1034.   | 899.8   | 990.4   | 474.3   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 200000. | 1000.   | 1000.   | 1000.   | 1000.   | 1000.   | 500.0   |
| Range  | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   | 20.00   |

## Analysis Report

QC Standard

Tue 02-20-96 07:52:30 PM

page 1

Method: COE

Sample Name: CCV

Operator: PMP

Run Time: 02/20/96 19:50:16

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 499.6   | 5242.   | 10150.  | 5073.   | 241.4   | 256.6   | 504.6   |
| SDev   | 3.3     | 39.     | 93.     | 64.     | 2.3     | 2.2     | 5.1     |
| %RSD   | .6532   | .7438   | .9174   | 1.261   | .9345   | .8496   | 1.008   |
| #1     | 496.2   | 5199.   | 10050.  | 5006.   | 238.9   | 256.5   | 498.7   |
| #2     | 500.0   | 5252.   | 10200.  | 5079.   | 242.1   | 258.8   | 507.0   |
| #3     | 502.7   | 5275.   | 10220.  | 5134.   | 243.2   | 254.5   | 508.0   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 500.0   | 5000.   | 10000.  | 5000.   | 250.0   | 250.0   | 500.0   |
| Range  | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 5129.   | 2016.   | 2538.   | 3082.   | 10100.  | 9968.   | 2568.   |
| SDev   | 42.     | 18.     | 24.     | 45.     | 97.     | 35.     | 22.     |
| %RSD   | .8237   | .3309   | .9421   | 1.451   | .9596   | .3491   | .8436   |
| #1     | 5083.   | 1996.   | 2514.   | 3031.   | 10020.  | 9973.   | 2545.   |
| #2     | 5138.   | 2026.   | 2539.   | 3102.   | 10080.  | 10000.  | 2571.   |
| #3     | 5167.   | 2027.   | 2562.   | 3114.   | 10210.  | 9931.   | 2588.   |
| Errors | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass | QC Pass |
| Value  | 5000.   | 2000.   | 2500.   | 3000.   | 10000.  | 10000.  | 2500.   |
| Range  | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   | 10.00   |

## Analysis Report

Blank Sample

Tue 02-20-96 07:56:02 PM

page 1

Method: COE

Sample Name: CCB ✓

Operator: PMP

Run Time: 02/20/96 19:53:48

Comment:

Mode: CONC Corr. Factor: 1

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| Elem   | Ag3280  | Al3082  | As1936  | Ba4934  | Be3130  | Cd2288  | Cr2677  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 1.411   | 24.51   | 1.382   | .7676   | .0227   | .7255   | 1.703   |
| SDev   | 2.358   | 17.73   | 24.10   | .5973   | .0769   | 1.123   | 3.319   |
| %RSD   | 167.1   | 72.32   | 1744.   | 77.82   | 339.2   | 154.7   | 194.9   |
| #1     | 4.116   | 27.12   | -20.04  | 1.112   | .0791   | 1.491   | 4.339   |
| #2     | .3292   | 40.80   | -3.293  | 1.112   | .0538   | 1.248   | 2.796   |
| #3     | -.2117  | 5.628   | 27.47   | .0778   | -.0649  | -.5631  | -2.024  |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 18.00   | 111.8   | 86.59   | 8.510   | .4600   | 10.08   | 14.99   |
| Low    | -18.00  | -111.3  | -86.59  | -8.510  | -.4600  | -10.08  | -14.99  |
| Elem   | Fe2599  | Ni2316  | Pb2203  | Sb2068  | Se1960  | Tl1908  | V-2924  |
| Units  | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     | ppb     |
| Avge   | 1.710   | -2.046  | 10.21   | 10.86   | -29.74  | 14.84   | 3.341   |
| SDev   | 1.450   | 5.070   | 17.82   | 8.28    | 17.93   | 9.70    | 1.882   |
| %RSD   | 84.70   | 63.01   | 174.4   | 76.21   | 62.40   | 65.41   | 56.33   |
| #1     | 3.384   | -12.16  | 24.78   | 14.04   | -11.65  | 25.89   | 5.259   |
| #2     | .8112   | -9.591  | 15.52   | 17.09   | -27.17  | 7.705   | 3.268   |
| #3     | .9399   | -2.384  | -9.651  | 1.468   | -47.41  | 10.92   | 1.497   |
| Errors | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass | LC Pass |
| High   | 14.73   | 26.04   | 96.86   | 81.16   | 116.5   | 102.7   | 12.04   |
| Low    | -14.73  | -26.04  | -96.86  | -81.16  | -116.5  | -102.7  | -12.04  |



## STATUS INFORMATION \*\*

Version: 66.0

Date Created: 07/31/91 08:49

Date Last Updated: 02/20/96 06:40

Number of elements: 14

Number of lines: 14

# of lines calibrated: 0

# of lines standardized: 14

02/20/96 06:58 - 02/20/96 07:04

Data collection mode: Spectrum Shifter &lt;4 positions&gt;

Approx. time for analysis 1.8 mins.

Protection status: Un-protected

## METHOD INFORMATION \*\*

Sample Introduction Device: Normal

Calibration Mode: Concentration

## Default Setup:

Number of Repeats : 3

Flush Time (sec) : 50.0

Auto-Increment Sample Names? No

Auto-store Analysis Data? Yes

Auto-store Stdzn Data? Yes

Store Individual Repeats? Yes

Auto-print Analysis Data? Yes

Auto-print Stdzn Report : +Readback

Condensed Print Format? No

## Default File Names:

Analysis Data File : PS0220B

Calibration Data File : PS0220B

Calibration Stds Table : PS0220B

Autosampler Table : COE

Sample Limits Table : LR846

Blank Limits Table : MB846

QC Check Table : CCV

## INTERNAL STANDARDS INFORMATION \*\*

| #                                                  | Elem Symbol | Wavelength | Pre-integration | Integration | Used? |
|----------------------------------------------------|-------------|------------|-----------------|-------------|-------|
| 1                                                  | Time        |            | 0               | 5.0         | Yes   |
| Ratio Constant/Intensity Multiplication Factor: .1 |             |            |                 |             |       |
| 2                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 3                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 4                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 5                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 6                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |
| 7                                                  | Time        |            | 0               | 5.0         | No    |
| Ratio Constant/Intensity Multiplication Factor: 1  |             |            |                 |             |       |

## OUTPUT INFORMATION \*\*

|                               |               |
|-------------------------------|---------------|
| Output Mode:                  | Concentration |
| Override Print Limits?        | Yes           |
| Override Significant Figures? | No            |
| Apply Background Correction?  | Yes           |
| Apply Blank Subtraction?      | No            |
| Limits Table: LR246           | Check? Yes    |
| Correction Factor:            | 1             |

## Report to:

|         |                               |
|---------|-------------------------------|
| Screen  | Avg                           |
| Printer | Avg, Stats, Reps, Errs, Units |

## PLASMA INFORMATION \*\*

## Gas Flow Rates

Torch gas flow : High Flow  
Auxiliary gas flow: Medium (1.0 L/min)

## Peristaltic Pump Parameters

Flush Pump Rate (RPM): 100  
Relaxation time (sec): 0  
Pump Tubing type : Tygon-Orange

## Plasma Parameters

|                           | Group<br>#1 | Group<br>#2 | Group<br>#3 | Group<br>#4 | Special<br>Group |
|---------------------------|-------------|-------------|-------------|-------------|------------------|
| Approximate RF Power (W): | 1150        | 1350        | 950         | 1750        | 1150             |
| Analysis Pump Rate (RPM): | 100         | 100         | 100         | 100         | 100              |
| Nebulizer Pressure (PSI): | 30          | 30          | 30          | 30          | 30               |

| Element:            | Ag       | Al        | As       | Ba       | Be       |
|---------------------|----------|-----------|----------|----------|----------|
| Wavelength:         | 328.068  | 308.215/2 | 193.696  | 493.409  | 313.042  |
| Element Name:       | Ag3280   | Al3082    | As1936   | Ba4934   | Be3130   |
| Line Switch Conc:   | 0        | 0         | 0        | 0        | 0        |
| Peak SS Offset:     | 0        | 0         | 0        | 0        | 0        |
| Timing Group No.:   | 1        | 1         | 1        | 1        | 1        |
| Print Limit Low:    | 0        | 0         | 0        | 0        | 0        |
| Print Limit High:   | 0        | 0         | 0        | 0        | 0        |
| Significant Figrs:  | 4        | 4         | 4        | 4        | 4        |
| Print Units:        | ppb      | ppb       | ppb      | ppb      | ppb      |
| BKG Low SS Offset:  | NONE     | NONE      | NONE     | NONE     | -15      |
| BKG High SS Offset: | 15       | 15        | 15       | 15       | NONE     |
| BKG Element Name:   | --n/a--  | --n/a--   | --n/a--  | --n/a--  | --n/a--  |
| BKG Factor:         | --n/a--  | --n/a--   | --n/a--  | --n/a--  | --n/a--  |
| Stdz. Method:       | Multiple | Multiple  | Multiple | Multiple | Multiple |
| Std #1 (High) Name: | S0       | S0        | S0       | S0       | S0       |
| Conc/Sig:           | 0        | 0         | 0        | 0        | 0        |
| Std #2 (Low) Name:  | S1A      | S1A       | S2A      | S1A      | S1A      |
| Conc/Sig:           | 250      | 2500      | 5000     | 2500     | 125      |
| Std #3 Name:        | S1B      | S1B       | S2B      | S1B      | S1B      |
| Conc:               | 500      | 5000      | 10000    | 5000     | 250      |
| Std #4 Name:        | S1       | S1        | S2       | S1       | S1       |
| Conc:               | 1000     | 10000     | 20000    | 10000    | 500      |
| Std #5 Name:        | --n/a--  | --n/a--   | --n/a--  | --n/a--  | --n/a--  |
| Conc:               | --n/a--  | --n/a--   | --n/a--  | --n/a--  | --n/a--  |
| Y - intercept:      | -2.91611 | -34.114   | -.173691 | .077827  | -.633313 |
| Slope:              | 270.436  | 763.398   | 364.384  | 103.46   | 7.73898  |
| Date Standardized:  | 02/20/96 | 02/20/96  | 02/20/96 | 02/20/96 | 02/20/96 |
| Time Standardized:  | 18:58    | 18:58     | 19:04    | 18:58    | 18:58    |
| Offset (A0):        | 0        | 0         | 0        | 0        | 0        |
| Gain (A1):          | 1        | 1         | 1        | 1        | 1        |
| Curvature (A2):     | 0        | 0         | 0        | 0        | 0        |
| Exponent (n):       | 1        | 1         | 1        | 1        | 1        |
| Max. Inflection:    | NONE     | NONE      | NONE     | NONE     | NONE     |
| Date of Fit:        | NO FIT   | NO FIT    | NO FIT   | NO FIT   | NO FIT   |
| Time of Fit:        |          |           |          |          |          |
| Use IECs:           | YES      | YES       | YES      | NO       | YES      |
| Number of IECs:     | 2        | 1         | 3        | 0        | 1        |

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|                    |         |         |        |         |        |
|--------------------|---------|---------|--------|---------|--------|
| Affecting Element: | Fe2599  | V-2924  | Al3082 | --n/a-- | V-2924 |
| k1 factor:         | -.00008 | -.03048 | .0037  | --n/a-- | .00286 |
| k2 factor:         | 0       | 0       | 0      | --n/a-- | 0      |
| use?:              | YES     | YES     | YES    | --n/a-- | YES    |

|                    |        |         |        |         |         |
|--------------------|--------|---------|--------|---------|---------|
| Affecting Element: | V-2924 | --n/a-- | Fe2599 | --n/a-- | --n/a-- |
| k1 factor:         | -.0082 | --n/a-- | .0001  | --n/a-- | --n/a-- |
| k2 factor:         | 0      | --n/a-- | 0      | --n/a-- | --n/a-- |
| use?:              | NO     | --n/a-- | YES    | --n/a-- | --n/a-- |

|                    |         |         |        |         |         |
|--------------------|---------|---------|--------|---------|---------|
| Affecting Element: | --n/a-- | --n/a-- | V-2924 | --n/a-- | --n/a-- |
| k1 factor:         | --n/a-- | --n/a-- | .01617 | --n/a-- | --n/a-- |
| k2 factor:         | --n/a-- | --n/a-- | 0      | --n/a-- | --n/a-- |
| use?:              | --n/a-- | --n/a-- | YES    | --n/a-- | --n/a-- |

|             |           |         |         |           |         |
|-------------|-----------|---------|---------|-----------|---------|
| Element:    | Cd        | Cr      | Fe      | Ni        | Pb      |
| Wavelength: | 228.802/2 | 267.716 | 259.940 | 231.604/2 | 220.353 |

|                   |        |        |        |        |        |
|-------------------|--------|--------|--------|--------|--------|
| Element Name:     | Cd2288 | Cr2677 | Fe2599 | Ni2316 | Pb2203 |
| Line Switch Conc: | 0      | 0      | 0      | 0      | 0      |
| Peak SS Offset:   | 0      | 0      | 0      | 0      | 0      |

|                   |   |   |   |   |   |
|-------------------|---|---|---|---|---|
| Timing Group No.: | 1 | 1 | 1 | 1 | 1 |
|-------------------|---|---|---|---|---|

|                   |   |   |   |   |   |
|-------------------|---|---|---|---|---|
| Print Limit Low:  | 0 | 0 | 0 | 0 | 0 |
| Print Limit High: | 0 | 0 | 0 | 0 | 0 |

|                    |     |     |     |     |     |
|--------------------|-----|-----|-----|-----|-----|
| Significant Figrs: | 4   | 4   | 4   | 4   | 4   |
| Print Units:       | ppb | ppb | ppb | ppb | ppb |

|                     |         |         |         |         |         |
|---------------------|---------|---------|---------|---------|---------|
| BKG Low SS Offset:  | NONE    | -15     | -15     | -15     | -15     |
| BKG High SS Offset: | 15      | NONE    | NONE    | NONE    | NONE    |
| BKG Element Name:   | --n/a-- | --n/a-- | --n/a-- | --n/a-- | --n/a-- |
| BKG Factor:         | --n/a-- | --n/a-- | --n/a-- | --n/a-- | --n/a-- |

|                     |          |          |          |          |          |
|---------------------|----------|----------|----------|----------|----------|
| Stdz. Method:       | Multiple | Multiple | Multiple | Multiple | Multiple |
| Std #1 (High) Name: | S0       | S0       | S0       | S0       | S0       |
| Conc/Sig:           | 0        | 0        | 0        | 0        | 0        |
| Std #2 (Low) Name:  | S1A      | S1A      | S1A      | S1A      | S1A      |
| Conc/Sig:           | 125      | 250      | 2500     | 1000     | 1250     |
| Std #3 Name:        | S1B      | S1B      | S1B      | S1B      | S1B      |
| Conc:               | 250      | 500      | 5000     | 2000     | 2500     |
| Std #4 Name:        | S1       | S1       | S1       | S1       | S1       |
| Conc:               | 500      | 1000     | 10000    | 4000     | 5000     |
| Std #5 Name:        | --n/a--  | --n/a--  | --n/a--  | --n/a--  | --n/a--  |
| Conc:               | --n/a--  | --n/a--  | --n/a--  | --n/a--  | --n/a--  |

Method: COE

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|                    |          |          |          |          |          |
|--------------------|----------|----------|----------|----------|----------|
| Y - intercept:     | 1.20062  | .867927  | -.346711 | -.581742 | -7.12228 |
| Slope:             | 227.562  | 95.4082  | 64.3303  | 64.3498  | 420.207  |
| Date Standardized: | 02/20/96 | 02/20/96 | 02/20/96 | 02/20/96 | 02/20/96 |
| Time Standardized: | 19:58    | 18:58    | 18:58    | 18:58    | 18:58    |
| Offset (A0):       | 0        | 0        | 0        | 0        | 0        |
| Gain (A1):         | 1        | 1        | 1        | 1        | 1        |
| Curvature (A2):    | 0        | 0        | 0        | 0        | 0        |
| Exponent (n):      | 1        | 1        | 1        | 1        | 1        |
| Max. Inflection:   | NONE     | NONE     | NONE     | NONE     | NONE     |
| Date of Fit:       | NO FIT   | NO FIT   | NO FIT   | NO FIT   | NO FIT   |
| Time of Fit:       |          |          |          |          |          |
| Use IECs:          | YES      | NO       | NO       | NO       | YES      |
| Number of IECs:    | 1        | 0        | 0        | 0        | 1        |
| Affecting Element: | As1936   | --n/a--  | --n/a--  | --n/a--  | A13082   |
| k1 factor:         | .0145    | --n/a--  | --n/a--  | --n/a--  | .0013    |
| k2 factor:         | 0        | --n/a--  | --n/a--  | --n/a--  | 0        |
| use?:              | YES      | --n/a--  | --n/a--  | --n/a--  | YES      |

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|                     |          |          |           |          |
|---------------------|----------|----------|-----------|----------|
| Element:            | Sb       | Se       | Tl        | V        |
| Wavelength:         | 206.838  | 196.026  | 190.864/2 | 292.402  |
| Element Name:       | Sb2068   | Se1960   | Tl1908    | V-2924   |
| Line Switch Conc:   | 0        | 0        | 0         | 0        |
| Peak SS Offset:     | 0        | 0        | 0         | 0        |
| Timing Group No.:   | 1        | 1        | 1         | 1        |
| Print Limit Low:    | 0        | 0        | 0         | 0        |
| Print Limit High:   | 0        | 0        | 0         | 0        |
| Significant Figrs:  | 4        | 4        | 4         | 4        |
| Print Units:        | ppb      | ppb      | ppb       | ppb      |
| BKG Low SS Offset:  | NONE     | -15      | NONE      | NONE     |
| BKG High SS Offset: | 15       | NONE     | 15        | 29       |
| BKG Element Name:   | --n/a--  | --n/a--  | --n/a--   | --n/a--  |
| BKG Factor:         | --n/a--  | --n/a--  | --n/a--   | --n/a--  |
| Stdz. Method:       | Multiple | Multiple | Multiple  | Multiple |
| Std #1 (High) Name: | S0       | S0       | S0        | S0       |
| Conc/Sig:           | 0        | 0        | 0         | 0        |
| Std #2 (Low) Name:  | S1A      | S2A      | S2A       | S1A      |
| Conc/Sig:           | 1500     | 5000     | 5000      | 1250     |
| Std #3 Name:        | S1B      | S2B      | S2B       | S1B      |
| Conc:               | 3000     | 10000    | 10000     | 2500     |
| Std #4 Name:        | S1       | S2       | S2        | S1       |
| Conc:               | 6000     | 20000    | 20000     | 5000     |
| Std #5 Name:        | --n/a--  | --n/a--  | --n/a--   | --n/a--  |
| Conc:               | --n/a--  | --n/a--  | --n/a--   | --n/a--  |
| Y - intercept:      | 12.334   | -22.4428 | 14.1321   | 4.15295  |
| Slope:              | 139.403  | 337.359  | 267.505   | 110.652  |
| Date Standardized:  | 02/20/96 | 02/20/96 | 02/20/96  | 02/20/96 |
| Time Standardized:  | 18:58    | 19:04    | 19:04     | 18:58    |
| Offset (A0):        | 0        | 0        | 0         | 0        |
| Gain (A1):          | 1        | 1        | 1         | 1        |
| Curvature (A2):     | 0        | 0        | 0         | 0        |
| Exponent (n):       | 1        | 1        | 1         | 1        |
| Max. Inflection:    | NONE     | NONE     | NONE      | NONE     |
| Date of Fit:        | NO FIT   | NO FIT   | NO FIT    | NO FIT   |
| Time of Fit:        |          |          |           |          |
| Use IECs:           | YES      | YES      | YES       | YES      |
| Number of IECs:     | 3        | 1        | 2         | 1        |

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|                    |        |         |        |         |
|--------------------|--------|---------|--------|---------|
| Affecting Element: | As1936 | Fe2599  | Fe2599 | Fe2599  |
| k1 factor:         | .00008 | -.00026 | .00133 | .000075 |
| k2 factor:         | 0      | 0       | 0      | 0       |
| use?:              | YES    | YES     | YES    | YES     |

|                    |         |         |        |         |
|--------------------|---------|---------|--------|---------|
| Affecting Element: | V-2924  | --n/a-- | V-2924 | --n/a-- |
| k1 factor:         | -.00843 | --n/a-- | .0018  | --n/a-- |
| k2 factor:         | 0       | --n/a-- | 0      | --n/a-- |
| use?:              | YES     | --n/a-- | YES    | --n/a-- |

|                    |         |         |         |         |
|--------------------|---------|---------|---------|---------|
| Affecting Element: | Ni2316  | --n/a-- | --n/a-- | --n/a-- |
| k1 factor:         | -.00143 | --n/a-- | --n/a-- | --n/a-- |
| k2 factor:         | 0       | --n/a-- | --n/a-- | --n/a-- |
| use?:              | YES     | --n/a-- | --n/a-- | --n/a-- |

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**MESTEN**

**Mercury**

15:31:16 19 Feb 1996

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Protocol: HGNORM

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| Line                   | Conc. | Units | SD/RSD      | 1      | 2                       | 3 | 4 | 5 |
|------------------------|-------|-------|-------------|--------|-------------------------|---|---|---|
| *** Standard: 1 Rep: 1 |       |       |             |        |                         |   |   |   |
|                        |       |       |             | Seq: 0 | 15:31:16 19 Feb 1996 HG |   |   |   |
| Hg                     | .000  | ppb   | -218        |        |                         |   |   |   |
|                        |       |       | Ave. Int. = | -218   | S. D. =                 | 0 |   |   |
| *** Standard: 2 Rep: 1 |       |       |             |        |                         |   |   |   |
|                        |       |       |             | Seq: 1 | 15:34:07 19 Feb 1996 HG |   |   |   |
| Hg                     | .500  | ppb   | 7586        |        |                         |   |   |   |
|                        |       |       | Ave. Int. = | 7586   | S. D. =                 | 0 |   |   |
| *** Standard: 3 Rep: 1 |       |       |             |        |                         |   |   |   |
|                        |       |       |             | Seq: 2 | 15:36:58 19 Feb 1996 HG |   |   |   |
| Hg                     | 1.00  | ppb   | 14950       |        |                         |   |   |   |
|                        |       |       | Ave. Int. = | 14950  | S. D. =                 | 0 |   |   |
| *** Standard: 4 Rep: 1 |       |       |             |        |                         |   |   |   |
|                        |       |       |             | Seq: 3 | 15:39:49 19 Feb 1996 HG |   |   |   |
| Hg                     | 2.00  | ppb   | 32082       |        |                         |   |   |   |
|                        |       |       | Ave. Int. = | 32082  | S. D. =                 | 0 |   |   |
| *** Standard: 5 Rep: 1 |       |       |             |        |                         |   |   |   |
|                        |       |       |             | Seq: 4 | 15:42:40 19 Feb 1996 HG |   |   |   |
| Hg                     | 5.00  | ppb   | 77748       |        |                         |   |   |   |
|                        |       |       | Ave. Int. = | 77748  | S. D. =                 | 0 |   |   |
| *** Standard: 6 Rep: 1 |       |       |             |        |                         |   |   |   |
|                        |       |       |             | Seq: 5 | 15:45:32 19 Feb 1996 HG |   |   |   |
| Hg                     | 10.0  | ppb   | 155985      |        |                         |   |   |   |
|                        |       |       | Ave. Int. = | 155985 | S. D. =                 | 0 |   |   |

H6021922

H62.2

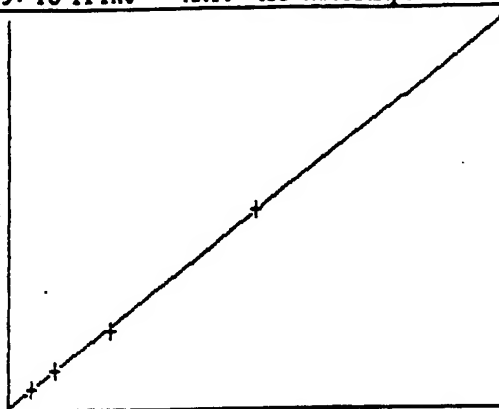
2/20/96

KKoerber

960095-CRA, MBI, LCI, LCA

96021964-004, 005, 008-010,  
013-015, 018-021,  
023-026

|                                     |            |               |       |              |          |                |  |                 |  |
|-------------------------------------|------------|---------------|-------|--------------|----------|----------------|--|-----------------|--|
| Protocol: HGMORM                    |            |               |       | Rev: 3.005   |          | Time: 15:45:48 |  | 19 Feb 1996     |  |
| Folder: H0821922                    |            |               |       | Seq: 6       |          | Print: On      |  |                 |  |
| User: KAK                           |            | Batch:        |       | Id: Std6Rep1 |          | Cup:           |  | Gas: 8.25 LPM   |  |
| State: Idle                         |            | Macro AUTOMOD |       | 79: F3 Print |          | Xmit: Off      |  | Autosampler: On |  |
| CALIBRATION: Line Calibration       |            |               |       |              |          |                |  |                 |  |
| Line: Hg                            |            |               |       |              |          |                |  |                 |  |
|                                     | Conc.      | Calc.         | Dev.  | LiNear       | Accepted |                |  |                 |  |
| S1                                  | .000       | -.006         | -.006 | Quadratic    |          |                |  |                 |  |
| S2                                  | .500       | .494          | -.006 | WtdLinear    |          |                |  |                 |  |
| S3                                  | 1.00       | .965          | -.035 |              | C        |                |  |                 |  |
| S4                                  | 2.00       | 2.06          | .063  | Accept       | o        |                |  |                 |  |
| S5                                  | 5.00       | 4.99          | -.013 |              | n        |                |  |                 |  |
| S6                                  | 10.0       | 10.0          | -.003 | StdAdd       | c        |                |  |                 |  |
| A                                   | .0000000   |               | r     | .999963      |          |                |  |                 |  |
| B                                   | 6.48397e-5 |               | C     | 8.00691e-3   |          |                |  |                 |  |
|                                     | Mean       | %RSD          |       |              |          |                |  |                 |  |
| S1                                  | -218       | 0             |       | -218         |          |                |  |                 |  |
| S2                                  | 7586       | 0             |       | 7586         |          |                |  |                 |  |
| S3                                  | 14950      | 0             |       | 14950        |          |                |  |                 |  |
| S4                                  | 32002      | 0             |       | 32002        |          |                |  |                 |  |
| S5                                  | 77748      | 0             |       | 77748        |          |                |  |                 |  |
| S6                                  | 155905     | 0             |       | 155905       |          |                |  |                 |  |
| New calibration coefficients stored |            |               |       |              |          |                |  |                 |  |



15:48:23 19 Feb 1996

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Protocol: HGNORM

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| Line                                                     | Conc. | Units | SD/RSD     | 1     | 2      | 3      | 4 | 5 |
|----------------------------------------------------------|-------|-------|------------|-------|--------|--------|---|---|
| <i>ICV</i>                                               |       |       |            |       |        |        |   |   |
| *** Check Standard: 2 Ck2 Seq: 6 15:48:23 19 Feb 1996 HG |       |       |            |       |        |        |   |   |
| Line                                                     | Flag  | %Rcv. | Found      | True  | Units  | SD/RSD |   |   |
| Hg                                                       |       | 101.  | 5.05       | 5.00  | ppb    | .000   |   |   |
| <i>ICB</i>                                               |       |       |            |       |        |        |   |   |
| *** Check Standard: 1 Ck1 Seq: 7 15:51:12 19 Feb 1996 HG |       |       |            |       |        |        |   |   |
| Line                                                     | Flag  | Found | Range(+/-) | Units | SD/RSD |        |   |   |
| Hg                                                       |       | -.002 | .200       | ppb   | .000   |        |   |   |
| <i>ICV</i>                                               |       |       |            |       |        |        |   |   |
| *** Check Standard: 2 Ck2 Seq: 8 15:54:01 19 Feb 1996 HG |       |       |            |       |        |        |   |   |
| Line                                                     | Flag  | %Rcv. | Found      | True  | Units  | SD/RSD |   |   |
| Hg                                                       |       | 101.  | 5.07       | 5.00  | ppb    | .000   |   |   |
| <i>ICB</i>                                               |       |       |            |       |        |        |   |   |
| *** Check Standard: 1 Ck1 Seq: 9 15:56:49 19 Feb 1996 HG |       |       |            |       |        |        |   |   |
| Line                                                     | Flag  | Found | Range(+/-) | Units | SD/RSD |        |   |   |
| Hg                                                       |       | .007  | .200       | ppb   | .000   |        |   |   |
| *** Sample ID: Seq: 10 15:59:36 19 Feb 1996 HG           |       |       |            |       |        |        |   |   |
| 96C0095-CRA                                              |       |       |            |       |        |        |   |   |
| Hg                                                       | .232  | ppb   | .000       | .232  |        |        |   |   |
| *** Sample ID: Seq: 11 16:02:21 19 Feb 1996 HG           |       |       |            |       |        |        |   |   |
| 96C0095-MB1                                              |       |       |            |       |        |        |   |   |
| Hg                                                       | .011  | ppb   | .000       | .011  |        |        |   |   |
| *** Sample ID: Seq: 12 16:05:06 19 Feb 1996 HG           |       |       |            |       |        |        |   |   |
| 96C0095-LC1                                              |       |       |            |       |        |        |   |   |
| Hg                                                       | 4.87  | ppb   | .000       | 4.87  |        |        |   |   |
| *** Sample ID: Seq: 13 16:07:52 19 Feb 1996 HG           |       |       |            |       |        |        |   |   |
| 96C0095-LC2                                              |       |       |            |       |        |        |   |   |
| Hg                                                       | 4.95  | ppb   | .000       | 4.95  |        |        |   |   |
| *** Sample ID: Seq: 14 16:10:38 19 Feb 1996 HG           |       |       |            |       |        |        |   |   |
| 9602L964-004                                             |       |       |            |       |        |        |   |   |
| Hg                                                       | .117  | ppb   | .000       | .117  |        |        |   |   |
| *** Sample ID: Seq: 15 16:13:24 19 Feb 1996 HG           |       |       |            |       |        |        |   |   |
| 9602L964-005                                             |       |       |            |       |        |        |   |   |
| Hg                                                       | .170  | ppb   | .000       | .170  |        |        |   |   |
| *** Sample ID: Seq: 16 16:16:10 19 Feb 1996 HG           |       |       |            |       |        |        |   |   |
| 9602L964-005R                                            |       |       |            |       |        |        |   |   |
| Hg                                                       | .138  | ppb   | .000       | .138  |        |        |   |   |
| *** Sample ID: Seq: 17 16:18:56 19 Feb 1996 HG           |       |       |            |       |        |        |   |   |
| 9602L964-005S                                            |       |       |            |       |        |        |   |   |
| Hg                                                       | 1.13  | ppb   | .000       | 1.13  | -      |        |   |   |

16:21:42 19 Feb 1996

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|------|-------|-------|--------|---|---|---|---|---|
|------|-------|-------|--------|---|---|---|---|---|

\*\*\* Sample ID: Seq: 18 16:21:42 19 Feb 1996 HG

9602L964-005T

Hg 1.14 ppb .000 1.14

\*\*\* Sample ID: Seq: 19 16:24:28 19 Feb 1996 HG

9602L964-008

Hg .004 ppb .000 .004

\*\*\* Check Standard: 2 Ck2 Seq: 20 16:27:16 19 Feb 1996 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|------|------|-------|-------|------|-------|--------|
| Hg   |      | 100.  | 5.01  | 5.00 | ppb   | .000   |

\*\*\* Check Standard: 1 Ck1 Seq: 21 16:30:04 19 Feb 1996 HG

| Line | Flag | Found | Range(+/-) | Units | SD/RSD |
|------|------|-------|------------|-------|--------|
| Hg   |      | .011  | .200       | ppb   | .000   |

\*\*\* Sample ID: Seq: 22 16:32:51 19 Feb 1996 HG

9602L964-009

Hg .041 ppb .000 .041

\*\*\* Sample ID: Seq: 23 16:35:36 19 Feb 1996 HG

9602L964-010

Hg .047 ppb .000 .047

\*\*\* Sample ID: Seq: 24 16:38:20 19 Feb 1996 HG

9602L964-013

Hg .019 ppb .000 .019

\*\*\* Sample ID: Seq: 25 16:41:04 19 Feb 1996 HG

9602L964-013R

Hg .020 ppb .000 .020

\*\*\* Sample ID: Seq: 26 16:43:48 19 Feb 1996 HG

9602L964-013S

Hg .907 ppb .000 .907

\*\*\* Sample ID: Seq: 27 16:46:32 19 Feb 1996 HG

9602L964-013T

Hg .870 ppb .000 .870

\*\*\* Sample ID: Seq: 28 16:49:16 19 Feb 1996 HG

9602L964-014

Hg .176 ppb .000 .176

\*\*\* Sample ID: Seq: 29 16:52:00 19 Feb 1996 HG

9602L964-014R

Hg .165 ppb .000 .165

16:54:44 19 Feb 1996

Folder: HG021922  
Protocol: HGNORM

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| Line                                                      | Conc. | Units            | SD/RSD | 1     | 2      | 3      | 4 | 5 |
|-----------------------------------------------------------|-------|------------------|--------|-------|--------|--------|---|---|
| *** Sample ID: Seq: 30 16:54:44 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-014S                                             |       |                  |        |       |        |        |   |   |
| Hg                                                        | 1.09  | ppb              | .000   | 1.09  |        |        |   |   |
| *** Sample ID: Seq: 31 16:57:28 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-014T                                             |       |                  |        |       |        |        |   |   |
| Hg                                                        | 1.08  | ppb              | .000   | 1.08  |        |        |   |   |
| *** Check Standard: 2 Ck2 Seq: 32 17:00:14 19 Feb 1996 HG |       |                  |        |       |        |        |   |   |
| Line                                                      | Flag  | %Rcv.            | Found  | True  | Units  | SD/RSD |   |   |
| Hg                                                        |       | 96.5             | 4.82   | 5.00  | ppb    | .000   |   |   |
| *** Check Standard: 1 Ck1 Seq: 33 17:03:03 19 Feb 1996 HG |       |                  |        |       |        |        |   |   |
| Line                                                      | Flag  | Found Range(+/-) |        | Units | SD/RSD |        |   |   |
| Hg                                                        |       | .009             | .200   | ppb   | .000   |        |   |   |
| *** Sample ID: Seq: 34 17:05:49 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-015                                              |       |                  |        |       |        |        |   |   |
| Hg                                                        | .233  | ppb              | .000   | .233  |        |        |   |   |
| *** Sample ID: Seq: 35 17:08:33 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-018                                              |       |                  |        |       |        |        |   |   |
| Hg                                                        | .007  | ppb              | .000   | .007  |        |        |   |   |
| *** Sample ID: Seq: 36 17:11:18 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-019                                              |       |                  |        |       |        |        |   |   |
| Hg                                                        | .066  | ppb              | .000   | .066  |        |        |   |   |
| *** Sample ID: Seq: 37 17:14:00 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-020                                              |       |                  |        |       |        |        |   |   |
| Hg                                                        | .123  | ppb              | .000   | .123  |        |        |   |   |
| *** Sample ID: Seq: 38 17:16:42 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-021                                              |       |                  |        |       |        |        |   |   |
| Hg                                                        | .086  | ppb              | .000   | .086  |        |        |   |   |
| *** Sample ID: Seq: 39 17:19:25 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-023                                              |       |                  |        |       |        |        |   |   |
| Hg                                                        | .074  | ppb              | .000   | .074  |        |        |   |   |
| *** Sample ID: Seq: 40 17:22:08 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-024                                              |       |                  |        |       |        |        |   |   |
| Hg                                                        | .082  | ppb              | .000   | .082  |        |        |   |   |
| *** Sample ID: Seq: 41 17:24:51 19 Feb 1996 HG            |       |                  |        |       |        |        |   |   |
| 9602L964-025                                              |       |                  |        |       |        |        |   |   |
| Hg                                                        | .030  | ppb              | .000   | .030  |        |        |   |   |

17:27:34 19 Feb 1996

Folder: HG021922  
Protocol: HGNORM

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| Line | Conc. | Units | SD/RSD | 1 | 2 | 3 | 4 | 5 |
|------|-------|-------|--------|---|---|---|---|---|
|------|-------|-------|--------|---|---|---|---|---|

\*\*\* Sample ID: Seq: 42 17:27:34 19 Feb 1996 HG

9602L964-026

Hg .054 ppb .000 .054

\*\*\* Check Standard: 2 Ck2 Seq: 43 17:30:20 19 Feb 1996 HG

| Line | Flag | %Rcv. | Found | True | Units | SD/RSD |
|------|------|-------|-------|------|-------|--------|
| Hg   |      | 96.5  | 4.83  | 5.00 | ppb   | .000   |

\*\*\* Check Standard: 1 Ck1 Seq: 44 17:33:09 19 Feb 1996 HG

| Line | Flag | Found Range(+/-) | Units | SD/RSD |
|------|------|------------------|-------|--------|
| Hg   |      | .007 .200        | ppb   | .000   |

**WESTON.**

## **Digestion Log**



## SAMPLE DIGESTION RECORD

Logbook # 10201Date/Time Initiated: 2/16/96 13:00Date/Time Completed: 2/17/96 1900Analyst: [Signature]Spike Witnessed By: Not availableDigestion Batch #: 96L0322Type of Prep.: ICPParameters: Sb, As, Ba, Be, Cd, Cr, Pb, Ni, Se, Ag, TiClient: COE-HUS GAS

Matrix (circle):

Soil H<sub>2</sub>O

Relinquished By:

Received By:

Method (circle):

CLP

Other (A1R)

Other (SWB46)

OP / Method #: 21-15-3020, 3

| RFW #                                                                                                       | Spike Info.   | Initial<br>WT/Vol. | Final<br>Vol. | %Solids | pH<2 | Total/<br>Soluble | Texture | Color/Appearance | Artifacts | Turbidity |
|-------------------------------------------------------------------------------------------------------------|---------------|--------------------|---------------|---------|------|-------------------|---------|------------------|-----------|-----------|
| 9602L964-                                                                                                   |               |                    |               |         |      |                   |         |                  |           |           |
| 008                                                                                                         |               |                    | 100ml         |         | <    | TOTAL             |         | c/d FACTOR       | 2/17/96   |           |
| 013                                                                                                         |               |                    |               |         | <    |                   |         | 0.1333           |           |           |
| 018                                                                                                         |               |                    |               |         | <    |                   |         | 0.1103           |           |           |
| 021                                                                                                         |               |                    |               |         | <    |                   |         | 0.1093           |           |           |
| 023                                                                                                         |               |                    | 150ml         |         | <    |                   |         | 0.1246           |           |           |
| 024                                                                                                         |               |                    |               |         | <    |                   |         | 0.1500           |           |           |
| 025                                                                                                         |               |                    |               |         | <    |                   |         | 0.1500           |           |           |
| 026                                                                                                         |               |                    |               |         | <    |                   |         | 0.1500           |           |           |
| 96L6322-                                                                                                    |               |                    |               |         |      |                   |         |                  |           |           |
| MB1                                                                                                         |               |                    | 100ml         |         |      |                   |         |                  |           |           |
| LC1                                                                                                         | INTERVIEW 1-4 |                    |               |         |      |                   |         |                  |           |           |
| LC2                                                                                                         | +             |                    |               |         |      |                   |         |                  |           |           |
| <p>see above book # 4493 pages 34-38<br/>(Multi-metals digestion log)</p> <p><u>[Signature]</u> 2/17/96</p> |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |
|                                                                                                             |               |                    |               |         |      |                   |         |                  |           |           |

Reagent/Standard & Lot Expiration & Preparation Information on Page 001

\* for SW-846 ICP/FLAA batches, specify method 3005 or 3010

b include date/time of transfer

RFW 21-21-018/B-08/95

Reviewed By/Date

UBANISNAI 2/20/96

Page #

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WESTON®

## MERCURY PREPARATION

Analyst: K. KuehlerDate: 2/19/96Start Time/Temp: 1320/90°CEnd Time/Temp: 1530/90°CInstrument ID: H2.2Balance #: NAPrep Batch: 9600095Worksheet: H6021922OP: 21-15-0245.1 Rev. 07Logbook # 5314pH < 2 for Liquids? Yes No (If no; designate affected samples in Comments column, and initiate an SDR)

| RFW #               | Container Number | Spike Info      | Initial Wt. or Volume (g or mL) | Final Sample Volume (mL) | Comments, % Solids, etc. |
|---------------------|------------------|-----------------|---------------------------------|--------------------------|--------------------------|
| <u>Blank</u>        | <u>2</u>         |                 | <u>33 mL</u>                    | <u>33 mL</u>             |                          |
| <u>0.5 ug/L</u>     | <u>200</u>       |                 |                                 |                          | <u>air</u>               |
| <u>1.0 ug/L</u>     | <u>2028</u>      |                 |                                 |                          | <u>Samples</u>           |
| <u>2.0 ug/L</u>     | <u>06</u>        |                 |                                 |                          |                          |
| <u>5.0 ug/L</u>     | <u>76</u>        |                 |                                 |                          |                          |
| <u>10.0 ug/L</u>    | <u>1208</u>      |                 |                                 |                          |                          |
| <u>ICV/CCV</u>      | <u>60</u>        | <u>5.0 ug/L</u> |                                 |                          |                          |
| <u>ICB/CCB</u>      | <u>140</u>       |                 |                                 |                          |                          |
| <u>CRA</u>          | <u>15</u>        | <u>0.2 ug/L</u> |                                 |                          |                          |
| <u>MBI</u>          | <u>29</u>        |                 |                                 |                          | <u>BLWPS</u>             |
| <u>LCI</u>          | <u>0111</u>      | <u>50 ug/L</u>  |                                 |                          | <u>LCSWPS</u>            |
| <u>LC2</u>          | <u>60</u>        | <u>1</u>        |                                 |                          | <u>LCSW2PS</u>           |
| <u>96021964-004</u> | <u>16X</u>       |                 | <u>11 mL</u>                    |                          | <u>KNO3</u>              |
| <u>-005</u>         | <u>1102</u>      |                 | <u>33 mL</u>                    |                          | <u>H2O</u>               |
| <u>-005R</u>        | <u>24</u>        |                 |                                 |                          |                          |
| <u>-005S</u>        | <u>125</u>       | <u>1.0 ug/L</u> |                                 |                          |                          |
| <u>-005T</u>        | <u>69</u>        | <u>1</u>        |                                 |                          |                          |
| <u>-008</u>         | <u>2045</u>      |                 | <u>3.33 mL</u>                  |                          | <u>H2O2</u>              |
| <u>-009</u>         | <u>A7</u>        |                 | <u>11 mL</u>                    |                          | <u>KNO3</u>              |
| <u>-010</u>         | <u>B2</u>        |                 | <u>33 mL</u>                    |                          | <u>H2O</u>               |
| <u>-013</u>         | <u>35P</u>       |                 | <u>3.33 mL</u>                  |                          | <u>H2O2</u>              |
| <u>-013R</u>        | <u>1101</u>      |                 |                                 |                          |                          |
| <u>-013S</u>        | <u>12</u>        | <u>1.0 ug/L</u> |                                 |                          |                          |

continued in book # 5363

| Standard:   | ID                 | Prep Date/Time | Expir Date |
|-------------|--------------------|----------------|------------|
| ICAL/MS     | High Purity        | 2/19/96/0955   | 12/96      |
| ICV/CCV/LCS | Inorganic Ventures | 2/19/96/0955   | 11/14/96   |

Reviewed By/Date: gn. Doughty 2/19/96

(Soil LCS = Buffalo River Sediment)

RFW 21-21L-018/H-12/95

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## MERCURY PREPARATION

Logbook # 5363

Analyst: Kayler

Instrument ID: H62.2

Prep Batch: 96C0095

Analyst:                       
Date: 2/19/94

Balance #: \_\_\_\_\_ (NA)

Worksheet: 146021922

Start Time/Temp: 133040

OP: 21-15-0245.1 Rev. 07

End Time/Temp: 1530/90°C

pH < 2 for Liquids? ☒ Yes ☐ No (If no; designate affected samples in Comments column, and initiate an SDR)

| RFW #                      | Container Number | Spike Info | Initial Wt. or Volume (g or mL) | Final Sample Volume (mL) | Comments, % Solids, etc.      |
|----------------------------|------------------|------------|---------------------------------|--------------------------|-------------------------------|
| 9602L944-013T              | V                | 1.0 ug/L   | 3.33ml                          | 33ml                     | H <sub>2</sub> O <sub>2</sub> |
| -014                       | UX               |            | 11ml                            |                          | KMnO <sub>4</sub>             |
| -014R                      | KG               |            |                                 |                          |                               |
| -014S                      | P                | 1.0 ug/L   |                                 |                          |                               |
| -014T                      | 1109             | I          |                                 |                          |                               |
| -015                       | 7Q               |            | 33ml                            |                          | HCl                           |
| -018                       | 165              |            | 3.33ml                          |                          | H <sub>2</sub> O <sub>2</sub> |
| -019                       | 201              |            | 11ml                            |                          | KMnO <sub>4</sub>             |
| -020                       | OK               |            | 33ml                            |                          | HCl                           |
| -021                       | B6               |            | 3.33ml                          |                          | H <sub>2</sub> O <sub>2</sub> |
| -023                       | UK               |            | 33ml                            |                          | Cmp                           |
| -024                       | 1025             |            |                                 |                          |                               |
| -025                       | H                |            |                                 |                          |                               |
| -026                       | 3X               |            |                                 |                          |                               |
| <del>10Kosaka 3/4/96</del> |                  |            |                                 |                          |                               |

| Standard:   | ID                 | Prep Date/Time | Expir Date |
|-------------|--------------------|----------------|------------|
| ICAL/MS     | High Purity        | 2/19/96/0955   | 12/96      |
| ICV/CCV/LCS | Inorganic Ventures | 2/19/96/0955   | 11/14/96   |

Reviewed By/Date: M. Lough 2/9/96

(Soil LCS = Buffalo River Sediment)

**RFW 21-21L-018/H-12/95**

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# MULTI-METALS DIGESTION LOG (AIR: Stationary Source Metals)

|                                 |  |                        |  |
|---------------------------------|--|------------------------|--|
| Analyst: <u>J. Miller</u>       |  | Notebook # <u>4493</u> |  |
| Date/Time: <u>2/16/96 13:00</u> |  | Page # <u>34</u>       |  |
| RFW Number: <u>9602L964</u>     |  |                        |  |
| Run Number: <u>Run 1</u>        |  |                        |  |

|                                                            |                       |                                                       |  |
|------------------------------------------------------------|-----------------------|-------------------------------------------------------|--|
| FRONT HALF (Fraction I)                                    |                       | Composite Sample # <u>023</u>                         |  |
| Sample # <u>002</u>                                        | Sample # <u>N/A</u>   | Sample # <u>001</u>                                   |  |
| Filter <u>0.425</u> g                                      | Acetone <u>N/A</u> mL | Nitric Rinse <u>111</u> mL                            |  |
| <u>        </u> g                                          | Particulates? Y / N   | C/D FACTOR = <u>0.1500</u> (METALS + H <sub>2</sub> ) |  |
| <u>        </u> g                                          |                       |                                                       |  |
| Final Volume Fraction I <u>150</u> mL (combined digestate) |                       |                                                       |  |
| Fraction Ia <u>100</u> mL (metals)                         |                       | FILTER IN BOMB # 4782-5                               |  |
| Fraction Ib <u>50</u> mL (mercury)                         |                       |                                                       |  |

|                                |                               |                                       |
|--------------------------------|-------------------------------|---------------------------------------|
| BACK HALF NITRIC (Fraction II) |                               | Sample # <u>004 003</u>               |
| Volume Received <u>N/A</u> mL  |                               | <u>11.2/16/96</u>                     |
| Fraction IIa                   | <u>11.2/16/96</u> mL (metals) | <u>Sample rec'd broken per log-in</u> |
| Fraction IIb                   | <u>        </u> mL (mercury)  |                                       |

|                                            |                         |                     |                            |
|--------------------------------------------|-------------------------|---------------------|----------------------------|
| BACK HALF KMnO <sub>4</sub> (Fraction III) |                         | Sample # <u>004</u> | BH HCl sample # <u>005</u> |
| Volume Received                            | <u>257</u> mL           | C/D = <u>0.2570</u> | VOL. REC'D <u>316</u> mL   |
| Fraction III                               | <u>257</u> mL (mercury) |                     | C/D = <u>0.3160</u>        |

COMMENTS:  
005 (B.V. #4) is brownish purple. Could be KMnO<sub>4</sub>.

|                                |                         |
|--------------------------------|-------------------------|
| Completed by: <u>J. Miller</u> | Reviewed By: <u>unp</u> |
| Date/Time: <u>2/17/96 1900</u> | Date: <u>2/22/96</u>    |

# MULTI-METALS DIGESTION LOG (AIR: Stationary Source Metals)

|                                       |  |                        |  |
|---------------------------------------|--|------------------------|--|
| Analyst: <u>J. Wehr</u>               |  | Notebook # <u>4493</u> |  |
| Date/Time: <u>2/16/96 13:00</u>       |  | Page # <u>35</u>       |  |
| RFW Number: <u>9602L964</u>           |  |                        |  |
| Run Number: <u>Site Blanks (S.B.)</u> |  |                        |  |

|                                                            |                       |                                                       |  |
|------------------------------------------------------------|-----------------------|-------------------------------------------------------|--|
| FRONT HALF (Fraction I)                                    |                       | Composite Sample # <u>024</u>                         |  |
| Sample # <u>007</u>                                        | Sample # <u>N/A</u>   | Sample # <u>006</u>                                   |  |
| Filter <u>0.389</u> g                                      | Acetone <u>N/A</u> mL | Nitric Rinse <u>201</u> mL                            |  |
| _____ g                                                    | Particulates? Y / N   | C/O FACTOR = <u>0.1500</u> (METALS + H <sub>2</sub> ) |  |
| _____ g                                                    |                       | FILTER IN BOMB # <u>4782-6</u>                        |  |
| Final Volume Fraction I <u>150</u> mL (combined digestate) |                       |                                                       |  |
| Fraction Ia <u>100</u> mL (metals)                         |                       |                                                       |  |
| Fraction Ib <u>50</u> mL (mercury)                         |                       |                                                       |  |

|                                     |                                 |                     |  |
|-------------------------------------|---------------------------------|---------------------|--|
| BACK HALF NITRIC (Fraction II)      |                                 | Sample # <u>008</u> |  |
| Volume Received <u>200ml</u> mL     | C/O = <u>0.1333</u> (metals)    |                     |  |
| Fraction IIa <u>150</u> mL (metals) | <u>0.2000</u> (H <sub>2</sub> ) |                     |  |
| Fraction IIb <u>50</u> mL (mercury) | 100% finch volume (ICP)         |                     |  |

|                                            |                     |                     |                          |                              |  |
|--------------------------------------------|---------------------|---------------------|--------------------------|------------------------------|--|
| BACK HALF KMnO <sub>4</sub> (Fraction III) |                     | Sample # <u>009</u> |                          | B.H. HCl SAMPLE # <u>010</u> |  |
| Volume Received <u>220</u> mL              | C/O = <u>0.2200</u> |                     | VOL. REC'D <u>224</u> mL |                              |  |
| Fraction III <u>220</u> mL (mercury)       |                     |                     | C/O = <u>0.2240</u>      |                              |  |

COMMENTS:

|                                      |                         |
|--------------------------------------|-------------------------|
| Completed by: <u>J. Jeffrey Wehr</u> | Reviewed By: <u>WJS</u> |
| Date/Time: <u>2/17/96 1900</u>       | Date: <u>2/22/96</u>    |

WESTON®

**MULTI-METALS DIGESTION LOG**  
(AIR: Stationary Source Metals)

Analyst: W. J. Welch  
Date/Time: 2/16/96 13:00  
RFW Number: 9602L964  
Run Number: Run 2

Notebook # 4493  
Page # 36

FRONT HALF (Fraction I) Composite Sample # 025  
Sample # 012 Sample # N/A Sample # 011  
Filter 0.405 g Acetone N/A mL Nitric Rinse 151 mL  
\_\_\_\_\_ g. Particulates? Y / N C/D = 0.1500 (metals + Hg)  
\_\_\_\_\_ g. FILTER IN BOMB WP # 4782-7  
Final Volume Fraction I 150 mL (combined digestate)  
Fraction Ia 150 mL (metals)  
Fraction Ib 50 mL (mercury)

BACK HALF NITRIC (Fraction II) Sample # 013  
Volume Received 538 mL C/D = 0.1103 (metals)  
Fraction IIa 488 mL (metals) 0.5380 (Hg)  
Fraction IIb 50 mL (mercury) 100% final volume (IIP)

|                                                                |                              |
|----------------------------------------------------------------|------------------------------|
| BACK HALF KMnO <sub>4</sub> (Fraction III) Sample # <u>014</u> | B.H. HCl sample # <u>015</u> |
| Volume Received <u>390</u> mL <u>C/D = 0.3900</u>              | VOL. REC'D <u>226</u> mL     |
| Fraction III <u>390</u> mL (mercury)                           | <u>C/D = 0.2260</u>          |

COMMENTS:

B.H. HCl is brown. could be KMnO<sub>4</sub>

Completed by: Jeffrey Welch  
Date/Time: 2/17/96 1900

Reviewed By: WJS  
Date: 2/22/96

WESTON®

**MULTI-METALS DIGESTION LOG**  
(AIR: Stationary Source Metals)

|                                |  |                                            |
|--------------------------------|--|--------------------------------------------|
| Analyst: <u>W. H. L.</u>       |  | Notebook # <u>4493</u><br>Page # <u>37</u> |
| Date/Time: <u>2/16/96 1300</u> |  |                                            |
| RFW Number: <u>9602L964</u>    |  |                                            |
| Run Number: <u>Run 3</u>       |  |                                            |

|                                                            |                             |                                   |
|------------------------------------------------------------|-----------------------------|-----------------------------------|
| FRONT HALF (Fraction I)                                    |                             | Composite Sample # <u>026</u>     |
| Sample # <u>017</u>                                        | Sample # <u>N/A</u>         | Sample # <u>016</u>               |
| Filter <u>0.406</u> g                                      | Acetone <u>N/A</u> mL       | Nitric Rinse <u>156</u> mL        |
| _____ g                                                    | Particulates? Y / N         | C/D = <u>0.1500</u> (metals + Hg) |
| _____ g                                                    | FILTER IN BOMB CUP # 4782-8 |                                   |
| Final Volume Fraction I <u>150</u> mL (combined digestate) |                             |                                   |
| Fraction Ia <u>100</u> mL (metals)                         |                             |                                   |
| Fraction Ib <u>50</u> mL (mercury)                         |                             |                                   |

|                                     |                                                                              |                     |
|-------------------------------------|------------------------------------------------------------------------------|---------------------|
| BACK HALF NITRIC (Fraction II)      |                                                                              | Sample # <u>018</u> |
| Volume Received <u>589</u> mL       | <sup>FW. 2/16/96</sup><br>C/D = <u>0.1093</u> (metals)<br><u>0.5890</u> (Hg) |                     |
| Fraction IIa <u>539</u> mL (metals) |                                                                              |                     |
| Fraction IIb <u>50</u> mL (mercury) | 100 mL final volume (ICP)                                                    |                     |

|                                            |                     |                                                                                                                                 |
|--------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------|
| BACK HALF KMnO <sub>4</sub> (Fraction III) |                     | Sample # <u>019</u>                                                                                                             |
| Volume Received <u>396</u> mL              | C/D = <u>0.3960</u> | B.H. HCl SAMPLE # <u>020</u><br>VOL. REC'D <u>0.229</u> mL<br><sup>FW. (229 mg)</sup><br>C/D = <u>0.2290</u> <sup>2/17/96</sup> |
| Fraction III <u>396</u> mL (mercury)       |                     |                                                                                                                                 |

COMMENTS:

018, 016 - no teflon tape around bottle lid (017, 018, 020 too)  
<sup>FW. 2/22/96</sup>

B.H. HCl is brown. could be KMnO<sub>4</sub>

|                                       |                              |
|---------------------------------------|------------------------------|
| Completed by: <u>J. Jeffrey W. L.</u> | Reviewed By: <u>W. H. L.</u> |
| Date/Time: <u>2/19/96 1900</u>        | Date: <u>2/27/96</u>         |

**WESTON®****MULTI-METALS DIGESTION LOG**  
**(AIR: Stationary Source Metals)**

|                                                                 |  |                                                         |  |
|-----------------------------------------------------------------|--|---------------------------------------------------------|--|
| Analyst: <u>W. Miller</u>                                       |  | Notebook # <u>4493</u>                                  |  |
| Date/Time: <u>2/16/96 13:00</u>                                 |  | Page # <u>38</u>                                        |  |
| RFW Number: <u>9602L96Y</u>                                     |  |                                                         |  |
| Run Number: <u>PT-R</u>                                         |  |                                                         |  |
| <b>FRONT HALF (Fraction I)</b> Composite Sample # _____         |  |                                                         |  |
| Sample # _____                                                  |  | Sample # _____                                          |  |
| Filter _____ g                                                  |  | Acetone _____ mL                                        |  |
| _____ g                                                         |  | Nitric Rinse _____ mL                                   |  |
| _____ g                                                         |  | Particulates? <u>Y / N</u> <u>N/A</u> <u>W. 2/16/96</u> |  |
| Final Volume Fraction I _____ mL (combined digestate)           |  |                                                         |  |
| Fraction Ia _____ mL (metals)                                   |  |                                                         |  |
| Fraction Ib _____ mL (mercury)                                  |  |                                                         |  |
| <b>BACK HALF NITRIC (Fraction II)</b> Sample # <u>021</u>       |  |                                                         |  |
| Volume Received <u>253</u> mL                                   |  | C/D = <u>0.1246</u> (metals)                            |  |
| Fraction IIa <u>203</u> mL (metals)                             |  | <u>0.2530</u> (Hg)                                      |  |
| Fraction IIb <u>50</u> mL (mercury)                             |  | <u>100 ml final volume (Ice)</u>                        |  |
| <b>BACK HALF KMnO<sub>4</sub> (Fraction III)</b> Sample # _____ |  |                                                         |  |
| Volume Received _____ mL                                        |  | <u>N/A</u> <u>W. 2/16/96</u>                            |  |
| Fraction III _____ mL (mercury)                                 |  |                                                         |  |
| <b>COMMENTS:</b>                                                |  |                                                         |  |
|                                                                 |  |                                                         |  |
| Completed by: <u>J. Jeffery Miller</u>                          |  | Reviewed By: <u>WJS</u>                                 |  |
| Date/Time: <u>2/17/96 1900</u>                                  |  | Date: <u>2/22/96</u>                                    |  |

RFW 21-21-018/G-02/92





WESTON®

## ICP RUN LOG

LOGBOOK # 5340PAGE # 7DATE: 02/20/96STANDARD: H.P. / I.V.PEAK PROFILE: -0.0128ANALYST: PMPPREPARER: MAKSPECTRAL SHIFT: 584INSTRUMENT ID: IC3TIME PREPARED: 17:00UNITS: \_\_\_\_\_ @ TIME: 00:15A

| DATA FILE                                                                                                                                            | DIGEST BATCH | CLIENT              | RFW NUMBER | # OF SPLS                                            | METH FILE | FILE TRANS. TO LIMS                         | REPRO. FILE (Y/N) | COMMENTS  |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|------------|------------------------------------------------------|-----------|---------------------------------------------|-------------------|-----------|
| PS0220A                                                                                                                                              | 96L0326      | TRC                 | 9602L955   | 3 QC<br>003, L<br>R, S<br>005<br>014, L, R, S<br>016 | Zn        | PSA-PRN<br>(IC3.1)                          | (Y)               | No Return |
|                                                                                                                                                      |              |                     |            |                                                      |           | Updated<br>PMP<br>2-20-96<br>Action 2/21/96 |                   |           |
| PS0220B                                                                                                                                              | 96L0322      | COE-HOT GAS         | 9602L964   | 023<br>024                                           | CoE       | PSB-PRN<br>(IC3.2)                          | (Y)               | No Return |
|                                                                                                                                                      |              |                     |            |                                                      |           | Merged<br>Updated<br>PMP<br>02-20-96        |                   |           |
| PS0220C                                                                                                                                              | 96L0328      | USACE<br>Nellis     | 9602L890   | 3 QC<br>002<br>006                                   | Zn        | PSC-PRN<br>(IC3.3)                          | (Y)               | No Return |
|                                                                                                                                                      |              |                     |            |                                                      |           | Merged<br>Updated<br>PMP<br>2-20-96         |                   |           |
| PS0220D                                                                                                                                              | 96L0346      | Sherwin<br>Williams | 9602L133   | 3 QC<br>021                                          | Pb        | PSD-PRN<br>(IC3.4)                          | (Y)               | No Return |
|                                                                                                                                                      | 96L0345      | ↓                   | 9602L133   | 3 QC<br>001<br>↓<br>016, L, R, S<br>↓<br>020         |           |                                             |                   |           |
| <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.5;">             PMP<br/>02-20-96           </div> |              |                     |            |                                                      |           |                                             |                   |           |
|                                                                                                                                                      |              |                     |            |                                                      |           |                                             |                   |           |
|                                                                                                                                                      |              |                     |            |                                                      |           |                                             |                   |           |
|                                                                                                                                                      |              |                     |            |                                                      |           |                                             |                   |           |
|                                                                                                                                                      |              |                     |            |                                                      |           |                                             |                   |           |
|                                                                                                                                                      |              |                     |            |                                                      |           |                                             |                   |           |
|                                                                                                                                                      |              |                     |            |                                                      |           |                                             |                   |           |
|                                                                                                                                                      |              |                     |            |                                                      |           |                                             |                   |           |

RFW 21-21-020/D-01/92

REVIEWED BY/DATE MD 2/21/96





**End of Data Package**

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**HEXAVALENT CHROMIUM**

---

# RESEARCH TRIANGLE INSTITUTE



Center for Environmental Measurements and Quality Assurance

February 21, 1996

Mr. Jeffrey D. O'Neill  
Roy F. Weston Inc.  
1 Weston Way  
West Chester, PA 19380

Dear Jeffrey,

Enclosed are the Cr(VI) analysis results as determined by ion chromatography using ultratrace mode for the impinger samples received on February 6, 1996 for RTI Project No. 91C-4848-02Q, Roy F. Weston WO# 02281-012-012-1200.

If you have any questions, please call me at 919-541-6569 or Peter Grohse at 919-541-6897.

Sincerely,

A handwritten signature in cursive script that reads "Kate K. Luk".

Kate K. Luk, Ph.D.

kk1

Ref: 91C-4848-02Q  
cc: W. Gutknecht  
P. Grohse  
C. Decker  
N. Singleton



## TECHNICAL REPORT

**Client:** Roy F. Weston Inc.

**Purchase Order No.:** Work Order No. 02281-012-012-1200

**RTI Project No.:** 91C-4848-02Q

**Date:** February 21, 1996

---

**By**

Kate K. Luk

**Submitted to:**

Mr. Jeffrey D. O'Neill  
Roy F. Weston Inc.  
1 Weston Way  
West Chester, PA 19380

## **INTRODUCTION**

Five impinger samples were received under Work Order No. 002281-012-012-1200 on February 6, 1996 for ultratrace hexavalent chromium analysis.

## **ANALYSIS**

The samples were analyzed as follows:

Digestion Method - N/A

Instrumentation - Dionex IC

Measurement Method - IC/PCR

QA/QC - Duplicates, spikes, blanks, calibration check solutions were used

## **RESULTS**

See Tables No. 1, 2, and 3.

**COMMENTS:** No problems encountered.

**SAMPLE CUSTODY:** Samples will be kept for 3 months after report is delivered.



RTI Project No.: 4848-02Q

Samples: Impinger Samples

Company: Roy F. Weston (WO# 02281-012-012-1200)

Analyte: Cr(VI)

Method of Analysis: Ion Chromatography / Post Column Reaction

Sample Received Date: 2-6-96

Report Date: 2-21-96

Table 1. Results for Cr(VI) Samples

| Sample                    | Total<br>Volume<br>L | Cr(VI)<br>ug/L | Total<br>Cr(VI)<br>ug |
|---------------------------|----------------------|----------------|-----------------------|
| COE-HG-AFT-OUT-CR6-R1-KOH | 0.989                | 62.0           | 61.3                  |
| COE-HG-AFT-OUT-CR6-R2-KOH | 0.940                | 67.5           | 63.5                  |
| COE-HG-AFT-OUT-CR6-R3-KOH | 1.006                | 47.5           | 47.8                  |
| COE-HG-OUT-CR6-SB-H2O     | 0.284                | < 0.15         | < 0.043               |
| COE-HG-OUT-CR6-SB-KOH     | 0.292                | 2.40           | 0.701                 |

|                 |      |
|-----------------|------|
| Detection Limit | 0.15 |
|-----------------|------|

Note:

Total Cr(VI), ug = Cr(VI), ug/L x Total volume, L

RTI Project No.: 4848-02Q

Samples: QC for Impinger Samples

Company: Roy F. Weston (WO# 02281-012-012-1200)

Analyte: Cr(VI)

Method of Analysis: Ion Chromatography / Post Column Reaction

Sample Received Date: 2-6-96

Report Date: 2-21-96

Table 2. Calibration Check Sample

| Sample | Cr(VI)<br>ug/L<br>Measured | Cr(VI)<br>ug/L<br>Expected |
|--------|----------------------------|----------------------------|
| QC     | 2.08                       | 2.00                       |
| QC     | 2.01                       | 2.00                       |

Table 3. Results of Blank, Duplicate, and Spike Analysis

| Sample                | Cr(VI)<br>ug/L<br>Measured | Cr(VI)<br>Spike<br>ug/L<br>Measured | Cr(VI)<br>Spike<br>ug/L<br>Expected | Cr(VI)<br>Spike<br>Recovery, % |
|-----------------------|----------------------------|-------------------------------------|-------------------------------------|--------------------------------|
| RTI-DIW               | < 0.15                     | —                                   | —                                   | —                              |
| COE-HG-CR6-R1-KOH DUP | 63.2                       | —                                   | —                                   | —                              |
| COE-HG-CR6-R3-KOH SPK | —                          | 2.29                                | 2.50                                | 91.6                           |

COE-HG-CR6-R1-KOH = COE-HG-AFT-OUT-CR6-R1-KOH

COE-HG-CR6-R3-KOH = COE-HG-AFT-OUT-CR6-R3-KOH

---

**EXPLOSIVES**

---

## EXPLOSIVES: COMPLETE SDG FILE (CSF) INVENTORY SHEET

|                  |                                                |
|------------------|------------------------------------------------|
| LABORATORY NAME: | <u>Roy F. Weston, Inc., Analytics Division</u> |
| CITY/STATE:      | <u>Lionville, PA</u>                           |
| CASE/SDG NO.:    | <u>9602L916</u>                                |
| CLIENT NAME:     | <u>DE-AMP HOT GAS</u>                          |
| WORK ORDER NO.:  | <u>02281-012-012-1200</u>                      |
| METHOD BASED ON: | <u>SW8330 -Explosives By HPLC</u>              |

All documents in the Client's copy of the complete SDG file must be legible, clearly labeled, paginated, single-sided original documents; or of sufficient copy quality to be reproducible to fourth generation copies. (Purge file documents, e.g., original-copy chain-of-custody, etc. assembled per specific contract request only.)

| CLIENT:<br>SDG No.: |                                                                                                                                                                                                                                                                                               | Page Nos |     | Check (initials/date) |        |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----|-----------------------|--------|
|                     |                                                                                                                                                                                                                                                                                               | From     | To  | Lab                   | Client |
| 1                   | Cover Page (Lab Chron)                                                                                                                                                                                                                                                                        | 1        | 2   | <i>[initials]</i>     |        |
| 2                   | Table of Contents                                                                                                                                                                                                                                                                             | 3        | 3   | <i>[initials]</i>     |        |
| 3                   | Case Narrative                                                                                                                                                                                                                                                                                | 4        | 8   | <i>[initials]</i>     |        |
| 4                   | Shipping, Receiving, and Custody Records <ul style="list-style-type: none"> <li>• Lab Chain of Custody/Work Request</li> <li>• Client Custody Reports/Packing Lists</li> <li>• Sample Tags, if applicable</li> <li>• Airbills</li> </ul>                                                      | 9        | 12  | <i>[initials]</i>     |        |
| 5                   | Explosives Sample Data/QC Summary <ul style="list-style-type: none"> <li>• Data Summary (LIMS Summary Report)</li> <li>• Surrogate %Recovery Summary (Form II)</li> <li>• MS/MSD Summary (Form III)</li> <li>• BS/BSD Summary (Form III)</li> <li>• Method Blank Summary (Form IV)</li> </ul> | 13       | 22  | <i>[initials]</i>     |        |
| 6                   | Sample Data, for each Sample: <ul style="list-style-type: none"> <li>• Explosive Results (Form I)</li> <li>• Chromatograms/Quant Reports, Primary column</li> <li>• Chromatograms/Quant Reports, Confirmation column</li> </ul>                                                               | 23       | 96  | <i>[initials]</i>     |        |
| 7                   | Calibration Standard Data                                                                                                                                                                                                                                                                     | 97       | 177 |                       |        |
|                     | Primary Column Standards Data <ul style="list-style-type: none"> <li>• Initial Multi-Range Calibration: Chromatograms/Quant Reports</li> <li>• Daily Calibration: Initial: Chromatograms/Quant Reports</li> <li>Continuing: Chromatograms/Quant Reports</li> </ul>                            | 98       | 177 | <i>[initials]</i>     |        |
|                     | Confirmation Column Standards Data <ul style="list-style-type: none"> <li>• Initial Multi-Range Calibration: Chromatograms/Quant Reports</li> <li>• Daily Calibration:</li> </ul>                                                                                                             | 178      | 177 | <i>[initials]</i>     |        |

| CLIENT: COE-Hot Gas |                                                    | Page Nos |     | Check (initials/date) |        |
|---------------------|----------------------------------------------------|----------|-----|-----------------------|--------|
| SDG No.: 9602L 916  |                                                    | From     | To  | Lab                   | Client |
|                     | Initial: Chromatograms/Quant Reports               |          |     | <i>[Signature]</i>    | _____  |
|                     | Continuing: Chromatograms/Quant Reports            |          |     | <i>[Signature]</i>    | _____  |
| 8                   | Raw QC Data: Blank and Matrix Spike Data           | 178      | 196 |                       |        |
|                     | Method Blank Data                                  | 179      | 196 |                       |        |
|                     | • Explosive Results (Form I)                       |          |     | <i>[Signature]</i>    | _____  |
|                     | • Chromatograms/Quant Reports, primary column      |          |     | <i>[Signature]</i>    | _____  |
|                     | • Chromatograms/Quant Reports, confirmation column |          |     | <i>[Signature]</i>    | _____  |
|                     | Blank Spike/Blank Spike Duplicate                  |          |     | <i>[Signature]</i>    | _____  |
|                     | • Explosive Results (Form I)                       |          |     | <i>[Signature]</i>    | _____  |
|                     | • Chromatograms/Quant Reports, primary column      |          |     | <i>[Signature]</i>    | _____  |
|                     | Matrix Spike/Matrix Spike Duplicate                | 1A       | —   | <i>[Signature]</i>    | _____  |
|                     | • Explosive Results (Form I)                       |          |     | <i>[Signature]</i>    | _____  |
|                     | • Chromatograms/Quant Reports, primary column      |          |     | <i>[Signature]</i>    | _____  |
| 9                   | Analysis Logbook Pages                             | 177      | 208 | <i>[Signature]</i>    | _____  |
| 10                  | Standards Preparation Records                      | 209      | 216 | <i>[Signature]</i>    | _____  |
|                     | • Surrogate and Target Analyte Spike Solutions     |          |     | <i>[Signature]</i>    | _____  |
|                     | • Analysis Standards                               |          |     | <i>[Signature]</i>    | _____  |
| 11                  | Preparation Logs                                   | 217      | 223 | <i>[Signature]</i>    | _____  |
|                     | • Sample Prep (Extraction) Records                 |          |     | <i>[Signature]</i>    | _____  |
| 12                  | Other/Miscellaneous                                | 224 (NA) |     | <i>[Signature]</i>    | _____  |
|                     |                                                    |          |     | <i>[Signature]</i>    | _____  |
|                     |                                                    |          |     | <i>[Signature]</i>    | _____  |
|                     |                                                    |          |     | <i>[Signature]</i>    | _____  |

COMMENTS: \_\_\_\_\_

Checked by:  
(Laboratory)

*[Signature]*  
Signature

*Javie Diswill*  
Printed Name/Title

*2-20-96*  
Date

Checked by:  
(Client)

Signature

Printed Name/Title

Date

**WESTERN**

**Cover Page (Lab Chron)**

Roy F. Weston, Inc. - Lionville Laboratory  
8330 ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/02/96

RFW LOT # :9602L916

| CLIENT ID            | RFW # | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|-------|-----|----------|------------|-----------|----------|
| AFTOUT-EXP/SV-R1-CND | 004   | AI  | 96LLC013 | 01/31/96   | 02/07/96  | 02/08/96 |
| IN/OUT-EXP/SV-SB-ACE | 006   | AI  | 96LLC017 | 01/31/96   | 02/08/96  | 02/09/96 |
| IN/OUT-EXP/SV-SB-CND | 009   | AI  | 96LLC013 | 01/31/96   | 02/07/96  | 02/08/96 |
| AFTIN-EXP-R1-CND     | 013   | AI  | 96LLC013 | 01/31/96   | 02/07/96  | 02/08/96 |
| AFTIN-EXP-R1-CND     | 013   | 01  | AI       | 01/31/96   | 02/07/96  | 02/08/96 |
| AFTIN-EXP-R1MS-CND   | 018   | AI  | 96LLC013 | 02/01/96   | 02/07/96  | 02/08/96 |
| AFTIN-EXP-R1MS-CND   | 018   | 01  | AI       | 02/01/96   | 02/07/96  | 02/08/96 |
| AFTOUT-EXP/SV-R1-FB  | 020   | AI  | 96LLC017 | 01/31/96   | 02/08/96  | 02/08/96 |
| AFTOUT-EXP/SV-R1-FX  | 021   | AI  | 96LLC014 | 01/31/96   | 02/07/96  | 02/08/96 |
| IN/OUT-EXP/SV-SB-FX  | 022   | AI  | 96LLC014 | 01/31/96   | 02/07/96  | 02/08/96 |
| AFTIN-EXP-R1-FB      | 023   | AI  | 96LLC017 | 01/31/96   | 02/08/96  | 02/09/96 |
| AFTIN-EXP-R1-FB      | 023   | 01  | AI       | 01/31/96   | 02/08/96  | 02/08/96 |
| AFTIN-EXP-R1-FX      | 024   | AI  | 96LLC014 | 01/31/96   | 02/07/96  | 02/08/96 |
| AFTIN-EXP-R1-FX      | 024   | 01  | AI       | 01/31/96   | 02/07/96  | 02/08/96 |
| AFTIN-EXP-R1MS-FB    | 025   | AI  | 96LLC017 | 02/01/96   | 02/08/96  | 02/09/96 |
| AFTIN-EXP-R1MS-FX    | 026   | AI  | 96LLC014 | 02/01/96   | 02/07/96  | 02/08/96 |
| AFTIN-EXP-R1MS-FX    | 026   | 01  | AI       | 02/01/96   | 02/07/96  | 02/10/96 |

LAB QC:

|     |        |    |          |     |          |          |
|-----|--------|----|----------|-----|----------|----------|
| BLK | MB1    | AI | 96LLC013 | N/A | 02/07/96 | 02/08/96 |
| BLK | MB1 BS | AI | 96LLC013 | N/A | 02/07/96 | 02/08/96 |
| BLK | MB1    | AI | 96LLC017 | N/A | 02/08/96 | 02/09/96 |
| BLK | MB1 BS | AI | 96LLC017 | N/A | 02/08/96 | 02/09/96 |
| BLK | MB1    | AI | 96LLC014 | N/A | 02/07/96 | 02/08/96 |
| BLK | MB1 BS | AI | 96LLC014 | N/A | 02/07/96 | 02/08/96 |



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### EXPLOSIVES

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**WESTERN**

**Case Narrative**



## LIONVILLE LABORATORY ANALYTICAL REPORT

Client : COE-HOT GAS  
RFW# : 9602L916

W.O :02281-012-012-1200-00  
Date Received: 02 February 1996

### EXPLOSIVE

1. The set of samples consisted of four (4) air samples collected on 31 January 1996 and 01 February 1996. Each sampling train consisted of three fractions: condensate, solid (filter / XAD), and solvent; each fraction was analyzed and reported individually.
2. The samples and their associated QC samples were prepared on 07,08 February 1996 and analyzed by methodology based on EPA method 8330 on 08,09,10 February 1996.
3. The sample ID's for this set of samples were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters on Organic CLP forms.
4. All required holding times for extraction and analysis were met.
5. All initial calibrations associated with this data set were within acceptance criteria.
6. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
7. Laboratory control limits were not available for assessing surrogate and spike recoveries for the procedures used to prepare these samples.
8. Tetryl was not recovered from the blank spike (96LLC017-MB1 BS) associated with the solvent matrix.
9. All samples associated with 'AFTIN' (afterburner inlet) required dilution due to the presence of high levels of target analytes.
10. Relatively low 1,3,5-Trinitrobenzene and Tetryl recoveries were observed for the blank spike (96LLC014-MB1 BS) associated with the solid matrix.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 225 pages.

005



11. The following solvent samples required two-fold dilutions due to immiscibility with acetonitrile:

1. IN/OUT-EXP/SV-SB-ACE
2. AFTIN-EXP-R1MS-FB
3. 96LLC017-MB1
4. 96LLC017-MB1 BS

*Bruce A. Miller*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2-21-96

Date

**DATA QUALIFIERS**

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

**ABBREVIATIONS**

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates spiked compound.

Initiator: K. Baker  
Date: 2-14-96  
Client: AAAP Hot Gas

RFW Batch: 9602L916, 943  
Samples: ALL  
Method: SW846/MCAWW/CLP

Parameter: ALL  
Matrix: AIR  
Prep Batch: \_\_\_\_\_

1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C.  
☐ Transcription Error ☐ Wrong Test Code ☒ Other Wrong matrix

b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: \_\_\_\_\_

c. QC Problem (Include all relevant specific results; attach data if necessary)

*ALL matrices should be air.  
please change all sampler listed as water to air.*

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

Other Description:

☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

*X change matrix where appropriate  
to air.*

4. Project Manager Instructions...signature/date: K Baker 2/14/96

☒ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☐ Client Contacted:  
Date/Person \_\_\_\_\_  
☐ Add  
☐ Cancel

5. Final Action...signature/date: Dynore 2/15/96

Other Explanation:

☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☐ Included in Case Narrative  
☒ Hard Copy COC Revised  
☒ Electronic COC Revised  
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

| Route                               | Distribution of Completed SDR       |
|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | X Initiator                         |
| <input checked="" type="checkbox"/> | X Lab Manager: J. Michael Taylor    |
| <input checked="" type="checkbox"/> | X Project Mgr:                      |
| <input checked="" type="checkbox"/> | X Section Mgr: Siery/Durke/Daniels  |
| <input checked="" type="checkbox"/> | X QA Section Mgr: Dianne Therry     |
| <input checked="" type="checkbox"/> | X QA File: Feldman/Racioppi/Shaffer |
| <input checked="" type="checkbox"/> | X Data Reporting: Som Basuthakur    |
| <input checked="" type="checkbox"/> | X Sample Prep: Osei-Mensah/Swisher  |

| Route                    | Distribution of Completed SDR            |
|--------------------------|------------------------------------------|
| <input type="checkbox"/> | Metals: Reichner/Doughty                 |
| <input type="checkbox"/> | Inorganic: Perrone/Leonards              |
| <input type="checkbox"/> | GC/LC: Jarvis/Skrzat/Schnell             |
| <input type="checkbox"/> | MS: LeMin/McIntyre/Taylor/Kasdras/Steele |
| <input type="checkbox"/> | Log-in: Geiger                           |
| <input type="checkbox"/> | EDD: Miller                              |
| <input type="checkbox"/> | Admin: Brewer/Keehn/Edgington            |
| <input type="checkbox"/> | Other: _____                             |

**WESTON**

**Shipping, Receiving, and Custody Record**



# Explosives - AFT- INLET

## Custody Transfer Record/Lab Work Request

|                                               |  |                  |  |               |  |                    |  |                    |  |         |  |       |  |       |  |
|-----------------------------------------------|--|------------------|--|---------------|--|--------------------|--|--------------------|--|---------|--|-------|--|-------|--|
| Client <b>CDE HOT GAS</b>                     |  | Refrigerator #   |  | Liquid        |  | Solid              |  | Liquid             |  | Solid   |  | INORG |  | Metal |  |
| Est. Final Proj. Sampling Date                |  | #/Type Container |  | Volume        |  | Preservatives      |  | ANALYSES REQUESTED |  | ORGANIC |  | VOA   |  | INORG |  |
| Work Order # <b>82081-012-012-1200</b>        |  | Volume           |  | Preservatives |  | ANALYSES REQUESTED |  | ORGANIC            |  | VOA     |  | INORG |  | Metal |  |
| Project Contact/Phone # <b>JOVNE/11 X7201</b> |  | Volume           |  | Preservatives |  | ANALYSES REQUESTED |  | ORGANIC            |  | VOA     |  | INORG |  | Metal |  |
| AD Project Manager <b>K. [Signature]</b>      |  | Volume           |  | Preservatives |  | ANALYSES REQUESTED |  | ORGANIC            |  | VOA     |  | INORG |  | Metal |  |
| QC <b>SPD</b>                                 |  | Volume           |  | Preservatives |  | ANALYSES REQUESTED |  | ORGANIC            |  | VOA     |  | INORG |  | Metal |  |
| Date Rec'd <b>2/3/16</b>                      |  | Volume           |  | Preservatives |  | ANALYSES REQUESTED |  | ORGANIC            |  | VOA     |  | INORG |  | Metal |  |
| Account # <b>CDE HOT GAS</b>                  |  | Volume           |  | Preservatives |  | ANALYSES REQUESTED |  | ORGANIC            |  | VOA     |  | INORG |  | Metal |  |

| MATRIX CODES: | Lab ID                     | Client ID/Description      | Matrix Chosen (✓) | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only |
|---------------|----------------------------|----------------------------|-------------------|-----|--------|----------------|----------------|---------------------------|
| 8 - Soil      | 010 CDE-H6-AFTW-EXP-R1-FHS | 010 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| SE - Sediment | 011 CDE-H6-AFTW-EXP-R1-FHS | 011 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| SO - Solid    | 012 CDE-H6-AFTW-EXP-R1-FHS | 012 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| SL - Sludge   | 013 CDE-H6-AFTW-EXP-R1-FHS | 013 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| W - Water     | 014 CDE-H6-AFTW-EXP-R1-FHS | 014 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| O - Oil       | 015 CDE-H6-AFTW-EXP-R1-FHS | 015 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| A - Air       | 016 CDE-H6-AFTW-EXP-R1-FHS | 016 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| D8 - Drum     | 017 CDE-H6-AFTW-EXP-R1-FHS | 017 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| DL - Drum     | 018 CDE-H6-AFTW-EXP-R1-FHS | 018 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| Liquids       | 019 CDE-H6-AFTW-EXP-R1-FHS | 019 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| L - EPTCLP    | 020 CDE-H6-AFTW-EXP-R1-FHS | 020 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| Leachate      | 021 CDE-H6-AFTW-EXP-R1-FHS | 021 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| WI - Wipe     | 022 CDE-H6-AFTW-EXP-R1-FHS | 022 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| X - Other     | 023 CDE-H6-AFTW-EXP-R1-FHS | 023 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |
| F - Fish      | 024 CDE-H6-AFTW-EXP-R1-FHS | 024 CDE-H6-AFTW-EXP-R1-FHS | ✓                 | MSD | MSD    | 2/3/16         | 14:00          | 2015                      |

| FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS                            | DATE/REVISIONS:                                                    |
|------------------------------------------------------------------------|--------------------------------------------------------------------|
| Special Instructions:                                                  | 1. NUC R1 INLET SAMPLES                                            |
| * RDX; HMX; Tetra; 2, 4-DNT;                                           | 2. MAY BE HAVE ELEMENTED                                           |
| 2, 6-DNT; NB; 1, 3-DNB;                                                | 3. CONCENTRATION - XRD and                                         |
| 1, 3, 5-TNB; 2, 4, 6-TNT                                               | 4. CONCENTRATION - yellow                                          |
| * Analyze 1 of 3 test for lower carbon number                          |                                                                    |
| semi-volatiles w/ EPA 8015 - select w/ based on higher                 |                                                                    |
| 30 values                                                              |                                                                    |
| Relinquished by <b>[Signature]</b> Date <b>2/3/16</b> Time <b>1:00</b> | Received by <b>[Signature]</b> Date <b>2/3/16</b> Time <b>1:00</b> |

| WESTON Analytics Use Only                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------|
| Samples were: 1) Shipped <input checked="" type="checkbox"/> or Hand Delivered <input checked="" type="checkbox"/> Airbill # <b>91858342</b> |
| 2) Unbroken on Other Package <input checked="" type="checkbox"/> Y or N                                                                      |
| 3) Received in Good Condition <input checked="" type="checkbox"/> Y or N                                                                     |
| 4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> Y or N                                                             |
| 5) Received Within Holding Times <input checked="" type="checkbox"/> Y or N                                                                  |
| COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> Y or N                                                              |

805, 805, 10, 10, 74, 47



## Custody Transfer Record/Lab Work Request

Client COE HDT 678  
 Est. Final Proj. Sampling Date \_\_\_\_\_  
 Work Order # \_\_\_\_\_  
 Project Contact/Phone # 96026916  
 AD Project Manager [Signature]  
 QC TAT Del \_\_\_\_\_ Date Due \_\_\_\_\_  
 Account # \_\_\_\_\_

| MATRIX CODES:<br>S - Soil<br>SE - Sediment<br>SO - Solid<br>SL - Sludge<br>W - Water<br>O - Oil<br>A - Air<br>DS - Drum<br>DL - Drum<br>L - Liquids<br>EP/CLP<br>WI - Wipe<br>X - Other<br>F - Fish | Lab ID | Client ID/Description | Matrix QC Chosen (✓) | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only |     |      |      |       |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------|----------------------|--------|----------------|----------------|---------------------------|-----|------|------|-------|-------|
|                                                                                                                                                                                                     |        |                       |                      |        |                |                | VOA                       | BNA | Pest | Herb | INORG | Metal |
|                                                                                                                                                                                                     | 020    | DETOUT-EXP-SV-R1-FB   | MS MSD               | Air    | 1/21/06        |                |                           |     |      |      |       |       |
|                                                                                                                                                                                                     | 021    | DETOUT-EXP-SV-R1-FX   |                      |        |                |                |                           |     |      |      |       |       |
|                                                                                                                                                                                                     | 022    | INJOUT-EXP-SV-SB-FX   |                      |        |                |                |                           |     |      |      |       |       |
|                                                                                                                                                                                                     | 023    | AETIN-EXP-R1-FB       |                      |        |                |                |                           |     |      |      |       |       |
|                                                                                                                                                                                                     | 024    | AETIN-EXP-R1-FX       |                      |        |                |                |                           |     |      |      |       |       |
|                                                                                                                                                                                                     | 025    | AETIN-EXP-RIMS-FB     |                      |        |                |                |                           |     |      |      |       |       |
|                                                                                                                                                                                                     | 026    | AETIN-EXP-RIMS-FX     |                      |        |                |                |                           |     |      |      |       |       |

## FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

## Special Instructions:

FB = FHS + BHS Composite  
 FX = FHT + XAD Composite

2/20/96 converted to KILN 1/2/06  
 H 0251026 per sample 9600020

## DATE/REVISIONS:

1. 6/25/01 013, 015, 023, 024, 025
2. 026 per 9600020
3. All materials on all samples
4. All materials on all samples
5. 020 added to 004, 013, 020, 021, 023
6. 024 per 9600020

| Relinquished by | Received by | Date    | Time |
|-----------------|-------------|---------|------|
| [Signature]     | [Signature] | 2/21/06 | 1:00 |

| Relinquished by | Received by | Date | Time |
|-----------------|-------------|------|------|
|                 |             |      |      |

Discrepancies Between  
 Samples Labels and  
 COC Record? Y or N  
 NOTES:

## WESTON Analytics Use Only

- Samples were:  
 1) Shipped \_\_\_\_\_ or  
 Hand Delivered \_\_\_\_\_  
 Airbill # \_\_\_\_\_  
 2) Ambient or Chilled  
 Package Y or N  
 3) Recycled Food  
 Condition Y or N  
 4) Labels Indicated  
 Properly Preserved Y or N  
 5) Received Within  
 Holding Times Y or N

**Explosive Sample QC/Data Summary**

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Report Date: 02/15/96 11:00

RFW Batch Number: 9602L916

Client: COE-HOT GAS

Work Order: 02281-012-012-1200-00

Page: 1

Cust ID: AFTOUT-EXP-R1 IN/OUT-EXP/S IN/OUT-EXP/S AFTIN-EXP-R1 AFTIN-EXP-R1 AFTIN-EXP-R1  
 V-R1-CND 004 AIR 1.00 2.00 1.00 100 5000 1.00  
 RFW#: 006 AIR 009 013 DL 018  
 Matrix: AIR AIR AIR AIR AIR  
 D.F.: 1.00 2.00 1.00 100 5000 1.00  
 Units: total ug total ug total ug total ug total ug total ug

| Surrogate:            | 1,2-Dinitrobenzene | 72    | 68     | 74      | D       | 84     |
|-----------------------|--------------------|-------|--------|---------|---------|--------|
| =====                 | =====              | ===== | =====  | =====   | =====   | =====  |
| HMX                   | 2.2 U              | 4.4 U | 2.2 U  | 220 U   | 11000 U | 2.2 U  |
| RDX                   | 1.0 U              | 2.0 U | 1.0 U  | 1400 U  | 5000 U  | 1.8 U  |
| 1,3,5-Trinitrobenzene | 0.50 U             | 1.0 U | 0.50 U | 600 U   | 2500 U  | 3.0 U  |
| 1,3-Dinitrobenzene    | 0.52 U             | 1.0 U | 0.52 U | 52 U    | 2600 U  | 0.52 U |
| Nitrobenzene          | 0.52 U             | 1.0 U | 0.52 U | 52 U    | 2600 U  | 0.52 U |
| Tetryl                | 1.5 U              | 2.9 U | 1.5 U  | 290 U   | 7300 U  | 1.5 U  |
| 2,4,6-Trinitrotoluene | 0.50 U             | 1.0 U | 0.50 U | 23000 E | 23000 U | 44 E   |
| 2,6-Dinitrotoluene    | 0.50 U             | 1.0 U | 0.50 U | 50 U    | 2500 U  | 0.50 U |
| 2,4-Dinitrotoluene    | 0.50 U             | 1.0 U | 0.50 U | 28 U    | 2500 U  | 0.50 U |

Cust ID: AFTIN-EXP-R1 AFTOUT-EXP/S AFTOUT-EXP/S IN/OUT-EXP/S AFTIN-EXP-R1 AFTIN-EXP-R1  
 MS-CND 018 DL AIR 020 021 022 023 DL  
 Matrix: AIR AIR AIR AIR AIR  
 D.F.: 10.0 1.00 1.00 1.00 100 40000  
 Units: total ug total ug total ug total ug total ug total ug

| Surrogate:            | 1,2-Dinitrobenzene | D      | 70    | 60    | 75      | D       |
|-----------------------|--------------------|--------|-------|-------|---------|---------|
| =====                 | =====              | =====  | ===== | ===== | =====   | =====   |
| HMX                   | 22 U               | 2.2 U  | 22 U  | 22 U  | 22 U    | 88000 U |
| RDX                   | 10 U               | 1.0 U  | 10 U  | 10 U  | 10 U    | 40000 U |
| 1,3,5-Trinitrobenzene | 5.0 U              | 0.50 U | 5.0 U | 5.0 U | 5.0 U   | 20000 U |
| 1,3-Dinitrobenzene    | 5.2 U              | 0.52 U | 5.2 U | 5.2 U | 52 U    | 21000 U |
| Nitrobenzene          | 5.2 U              | 0.52 U | 5.2 U | 5.2 U | 52 U    | 21000 U |
| Tetryl                | 15 U               | 1.5 U  | 15 U  | 15 U  | 150 U   | 58000 U |
| 2,4,6-Trinitrotoluene | 40 U               | 0.50 U | 5.0 U | 5.0 U | 32000 E | 29000 U |
| 2,6-Dinitrotoluene    | 5.0 U              | 0.50 U | 5.0 U | 5.0 U | 50 U    | 20000 U |
| 2,4-Dinitrotoluene    | 5.0 U              | 0.50 U | 5.0 U | 5.0 U | 50 U    | 20000 U |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
 % = Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

# Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Report Date: 02/15/96 11:00

RFW Batch Number: 9602L916

Client: COE-HOT GAS

Work Order: 02281-012-012-1200-00

Page: 2

Cust ID: AFTIN-EXP-R1 AFTIN-EXP-R1 AFTIN-EXP-R1 AFTIN-EXP-R1 AFTIN-EXP-R1 BLK  
 -FX 024 DL 024 DL 025 MS-FB MS-FX MS-FX 96LLC013-MB1  
 AIR AIR AIR AIR AIR AIR AIR AIR  
 D.F.: 1.00 100 2.00 2.00 1.00 2.00 1.00 1.00  
 Units: total ug total ug total ug total ug total ug total ug total ug

|                               |      |   |      |   |     |   |     |   |     |   |
|-------------------------------|------|---|------|---|-----|---|-----|---|-----|---|
| Surrogate: 1,2-Dinitrobenzene | 106  | U | D    | U | 70  | U | 62  | U | 76  | U |
| HMX                           | 22   | U | 2200 | U | 4.4 | U | 22  | U | 44  | U |
| RDX                           | 88   | U | 1000 | U | 2.0 | U | 10  | U | 20  | U |
| 1,3,5-Trinitrobenzene         | 84   | U | 500  | U | 1.0 | U | 5.0 | U | 10  | U |
| 1,3-Dinitrobenzene            | 14   | U | 520  | U | 1.0 | U | 5.2 | U | 10  | U |
| Nitrobenzene                  | 5.2  | U | 520  | U | 1.0 | U | 5.2 | U | 10  | U |
| Tetryl                        | 26   | U | 1500 | U | 2.9 | U | 15  | U | 29  | U |
| 2,4,6-Trinitrotoluene         | 3600 | E | 4000 | U | 1.6 | U | 110 | E | 110 | U |
| 2,6-Dinitrotoluene            | 5.0  | U | 500  | U | 1.0 | U | 5.0 | U | 10  | U |
| 2,4-Dinitrotoluene            | 48   | U | 500  | U | 1.0 | U | 5.0 | U | 10  | U |

Cust ID: BLK BS BLK BLK BS BLK BS BLK BS  
 RFW#: 96LLC013-MB1 96LLC017-MB1 96LLC017-MB1 96LLC014-MB1 96LLC014-MB1  
 Matrix: AIR AIR AIR AIR AIR  
 D.F.: 1.00 2.00 2.00 1.00 1.00  
 Units: total ug total ug total ug total ug total ug

|                               |    |   |     |   |    |   |     |   |    |   |
|-------------------------------|----|---|-----|---|----|---|-----|---|----|---|
| Surrogate: 1,2-Dinitrobenzene | 74 | U | 45  | U | 26 | U | 66  | U | 74 | U |
| HMX                           | 70 | U | 4.4 | U | 18 | U | 22  | U | 72 | U |
| RDX                           | 62 | U | 2.0 | U | 29 | U | 10  | U | 66 | U |
| 1,3,5-Trinitrobenzene         | 79 | U | 1.0 | U | 21 | U | 5.0 | U | 26 | U |
| 1,3-Dinitrobenzene            | 74 | U | 1.0 | U | 27 | U | 5.2 | U | 78 | U |
| Nitrobenzene                  | 76 | U | 1.0 | U | 36 | U | 5.2 | U | 83 | U |
| Tetryl                        | 88 | U | 2.9 | U | 13 | U | 15  | U | 18 | U |
| 2,4,6-Trinitrotoluene         | 87 | U | 1.0 | U | 23 | U | 5.0 | U | 73 | U |
| 2,6-Dinitrotoluene            | 82 | U | 1.0 | U | 23 | U | 5.0 | U | 84 | U |
| 2,4-Dinitrotoluene            | 80 | U | 1.0 | U | 21 | U | 5.0 | U | 82 | U |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
 % = Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

8MD 2/15/96

2F

SOIL ORGANICS SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot No.: 9602L916

GC Column(1): OD5/DA ID: OD5/ (mm)

GC Column(2): ID: OD5 (mm)

|    | CLIENT               | 1      | 2      | 1      | 2      | 1      | 2      | TOT |
|----|----------------------|--------|--------|--------|--------|--------|--------|-----|
|    | SAMPLE NO.           | %REC # | %REC # | %REC # | %REC # | %REC # | %REC # | OUT |
| 01 | AFTOUT-EXP/SV-R1-CND | 72     |        |        |        |        |        | 0   |
| 02 | IN/OUT-EXP/SV-SB-ACE | 68     |        |        |        |        |        | 0   |
| 03 | IN/OUT-EXP/SV-SB-CND | 74     |        |        |        |        |        | 0   |
| 04 | AFTIN-EXP-R1-CND     | D      |        |        |        |        |        | 0   |
| 05 | AFTIN-EXP-R1-CND     | D      |        |        |        |        |        | 0   |
| 06 | AFTIN-EXP-R1MS-CND   | 84     |        |        |        |        |        | 0   |
| 07 | AFTIN-EXP-R1MS-CND   | D      |        |        |        |        |        | 0   |
| 08 | AFTOUT-EXP/SV-R1-FB  | 70     |        |        |        |        |        | 0   |
| 09 | AFTOUT-EXP/SV-R1-FX  | 60     |        |        |        |        |        | 0   |
| 10 | IN/OUT-EXP/SV-SB-FX  | 75     |        |        |        |        |        | 0   |
| 11 | AFTIN-EXP-R1-FB      | D      |        |        |        |        |        | 0   |
| 12 | AFTIN-EXP-R1-FB      | D      |        |        |        |        |        | 0   |
| 13 | AFTIN-EXP-R1-FX      | 106    |        |        |        |        |        | 0   |
| 14 | AFTIN-EXP-R1-FX      | D      |        |        |        |        |        | 0   |
| 15 | AFTIN-EXP-R1MS-FB    | 70     |        |        |        |        |        | 0   |
| 16 | AFTIN-EXP-R1MS-FX    | 62     |        |        |        |        |        | 0   |
| 17 | AFTIN-EXP-R1MS-FX    | D      |        |        |        |        |        | 0   |
| 18 | BLK                  | 76     |        |        |        |        |        | 0   |
| 19 | BLKBS                | 74     |        |        |        |        |        | 0   |
| 20 | BLK                  | 45     |        |        |        |        |        | 0   |
| 21 | BLKBS                | 26     |        |        |        |        |        | 0   |
| 22 | BLK                  | 66     |        |        |        |        |        | 0   |
| 23 | BLKBS                | 74     |        |        |        |        |        | 0   |

ADVISORY  
QC LIMITS  
( 1-999)

= 1,2-Dinitrobenzene

# Column to be used to flag recovery values  
\* Values outside of QC limits  
D Surrogate diluted out

No Control Limits Available

8MD 2/15/96

3F  
AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC013-MB1

BLANK Spike - Sample No.: BLK

| COMPOUND              | SPIKE                                        | SAMPLE                                               | BS                                                   | BS         | QC             |
|-----------------------|----------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------|----------------|
|                       | ADDED<br>(tot. <del>mg</del> <sup>ug</sup> ) | CONCENTRATION<br>(tot. <del>mg</del> <sup>ug</sup> ) | CONCENTRATION<br>(tot. <del>mg</del> <sup>ug</sup> ) | %<br>REC # | LIMITS<br>REC. |
| HMX                   | 22.0                                         | 0                                                    | 15                                                   | 70         | 1-999          |
| RDX                   | 10.0                                         | 0                                                    | 6.2                                                  | 62         | 1-999          |
| 1,3,5-Trinitrobenzene | 2.50                                         | 0                                                    | 2.0                                                  | 79         | 1-999          |
| 1,3-Dinitrobenzene    | 2.50                                         | 0                                                    | 1.8                                                  | 74         | 1-999          |
| Nitrobenzene          | 2.60                                         | 0                                                    | 2.0                                                  | 76         | 1-999          |
| Tetryl                | 6.50                                         | 0                                                    | 5.7                                                  | 88         | 1-999          |
| 2,4,6-Trinitrotoluene | 2.50                                         | 0                                                    | 2.2                                                  | 87         | 1-999          |
| 2,6-Dinitrotoluene    | 2.60                                         | 0                                                    | 2.1                                                  | 82         | 1-999          |
| 2,4-Dinitrotoluene    | 2.50                                         | 0                                                    | 2.0                                                  | 80         | 1-999          |

# Column to be used to flag recovery value with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 9 outside limits

COMMENTS: No Control Limits Available

*8MD*  
*2/15/96*

3F  
AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC014-MB1

BLANK Spike - Sample No.: BLK

*MD2/15/96*

| COMPOUND              | SPIKE                 | SAMPLE                | BS                    | BS    | QC     |
|-----------------------|-----------------------|-----------------------|-----------------------|-------|--------|
|                       | ADDED                 | CONCENTRATION         | CONCENTRATION         | %     | LIMITS |
|                       | (tot. <del>pg</del> ) | (tot. <del>pg</del> ) | (tot. <del>pg</del> ) | REC # | REC.   |
| =====                 | =====                 | =====                 | =====                 | ===== | =====  |
| HMX                   | 220                   | 0                     | 160                   | 72    | 1-999  |
| RDX                   | 100                   | 0                     | 66                    | 66    | 1-999  |
| 1,3,5-Trinitrobenzene | 25.0                  | 0                     | 6.4                   | 26    | 1-999  |
| 1,3-Dinitrobenzene    | 25.0                  | 0                     | 20                    | 78    | 1-999  |
| Nitrobenzene          | 26.0                  | 0                     | 22                    | 83    | 1-999  |
| Tetryl                | 65.0                  | 0                     | 11                    | 18    | 1-999  |
| 2,4,6-Trinitrotoluene | 25.0                  | 0                     | 18                    | 73    | 1-999  |
| 2,6-Dinitrotoluene    | 26.0                  | 0                     | 22                    | 84    | 1-999  |
| 2,4-Dinitrotoluene    | 25.0                  | 0                     | 21                    | 82    | 1-999  |

# Column to be used to flag recovery value with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 9 outside limits

COMMENTS: Control Limits Not Available

3F  
AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client: COE-HOT GAS

RFW Lot No.: 96LLC017-MB1

BLANK Spike - Sample No.: BLK

*8MD 2/15/96*

| COMPOUND              | SPIKE<br>ADDED<br>(tot. pg) | SAMPLE<br>CONCENTRATION<br>(tot. pg) | BS<br>CONCENTRATION<br>(tot. pg) | BS<br>%<br>REC # | QC<br>LIMITS<br>REC. |
|-----------------------|-----------------------------|--------------------------------------|----------------------------------|------------------|----------------------|
| =====                 | <i>ug</i>                   | <i>ug</i>                            | <i>ug</i>                        |                  |                      |
| HMX                   | 22.0                        | 0                                    | 4.0                              | 18               | 1-999                |
| RDX                   | 10.0                        | 0                                    | 2.9                              | 29               | 1-999                |
| 1,3,5-Trinitrobenzene | 2.50                        | 0                                    | 0.52                             | 21               | 1-999                |
| 1,3-Dinitrobenzene    | 2.50                        | 0                                    | 0.68                             | 27               | 1-999                |
| Nitrobenzene          | 2.60                        | 0                                    | 0.94                             | 36               | 1-999                |
| Tetryl                | 6.50                        | 0                                    | 0                                | 0 *              | 1-999                |
| 2,4,6-Trinitrotoluene | 2.50                        | 0                                    | 0.32                             | 13               | 1-999                |
| 2,6-Dinitrotoluene    | 2.60                        | 0                                    | 0.60                             | 23               | 1-999                |
| 2,4-Dinitrotoluene    | 2.50                        | 0                                    | 0.52                             | 21               | 1-999                |

# Column to be used to flag recovery value with an asterisk

\* Values outside of QC limits

Spike Recovery: 1 out of 9 outside limits

COMMENTS: Tetryl not recovered in K-D procedure  
Recovery Limits Not Available

*8MD*  
*2/15/96*



## 4C

BLK

Contract: 2281-12-12

Lab File ID: 02089646.04

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 02/07/96

Date Analyzed (2): \_\_\_\_\_

Time Analyzed (2) : \_\_\_\_\_

Instrument ID (2):

GC Column (2): ID: \_\_\_\_\_ (mm)

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | DATE<br>ANALYZED 1 | DATE<br>ANALYZED 2 |
|----|----------------------|------------------|--------------------|--------------------|
|    | =====                | =====            | =====              | =====              |
| 01 | AFTOUT-EXP/S         | 9602L916-004     | 02/08/96           |                    |
| 02 | IN/OUT-EXP/S         | 9602L916-009     | 02/08/96           |                    |
| 03 | AFTIN-EXP-R1         | 9602L916-013     | 02/08/96           |                    |
| 04 | AFTIN-EXP-R1         | 9602L916-013     | 02/08/96           |                    |
| 05 | AFTIN-EXP-R1         | 9602L916-018     | 02/08/96           |                    |
| 06 | AFTIN-EXP-R1         | 9602L916-018     | 02/08/96           |                    |
| 07 | BLKBS                | 96LLC013-MB1S    | 02/08/96           |                    |

**COMMENTS :**

**4C**

| BLK

Contract: 2281-12-12

GC Column (2): ID: \_\_\_\_\_ (mm)

| CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | DATE<br>ANALYZED 1 | DATE<br>ANALYZED 2 |
|----------------------|------------------|--------------------|--------------------|
| =====                | =====            | =====              | =====              |
| AFTOUT-EXP/S         | 9602L916-021     | 02/08/96           |                    |
| IN/OUT-EXP/S         | 9602L916-022     | 02/08/96           |                    |
| AFTIN-EXP-R1         | 9602L916-024     | 02/08/96           |                    |
| AFTIN-EXP-R1         | 9602L916-024     | 02/08/96           |                    |
| AFTIN-EXP-R1         | 9602L916-026     | 02/08/96           |                    |
| AFTIN-EXP-R1         | 9602L916-026     | 02/10/96           |                    |
| BLKBS                | 96LLC014-MB1S    | 02/08/96           |                    |

COMMENTS: \_\_\_\_\_

3/2/96

BLK

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client: COE-HOT GAS

Lab Sample ID: 96LLC017-MB1

Lab File ID: 02099646.16

Matrix: (soil/water) AIR

Extraction: (SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) -

Date Extracted: 02/08/96

Date Analyzed (1): 02/09/96

Date Analyzed (2): \_\_\_\_\_

Time Analyzed (1): 1351

Time Analyzed (2): \_\_\_\_\_

Instrument ID (1): 46

Instrument ID (2):

GC Column (1): OD5/DA ID: OD5/(mm)

GC Column (2): ID: \_\_\_\_\_ (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

|    | CLIENT       | LAB           | DATE       | DATE       |
|----|--------------|---------------|------------|------------|
|    | SAMPLE NO.   | SAMPLE ID     | ANALYZED 1 | ANALYZED 2 |
|    | =====        | =====         | =====      | =====      |
| 01 | IN/OUT-EXP/S | 9602L916-006  | 02/09/96   |            |
| 02 | AFTOUT-EXP/S | 9602L916-020  | 02/08/96   |            |
| 03 | AFTIN-EXP-R1 | 9602L916-023  | 02/09/96   |            |
| 04 | AFTIN-EXP-R1 | 9602L916-023  | 02/08/96   |            |
| 05 | AFTIN-EXP-R1 | 9602L916-025  | 02/09/96   |            |
| 06 | BLKBS        | 96LLC017-MB1S | 02/09/96   |            |

COMMENTS: \_\_\_\_\_

**WESTERN**

**Analysis Run Logs**

AD 197  
2-21-96 IX



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## HPLC ANALYSIS LOG

193

INSTRUMENT #: \_\_\_\_\_ ANALYST: \_\_\_\_\_  
DETECTOR: \_\_\_\_\_ MOBILE PHASE: 50% MeOH FLOW RATE: \_\_\_\_\_  
WAVELENGTH: \_\_\_\_\_ COLUMN TYPE: \_\_\_\_\_ COLUMN SERIAL #: \_\_\_\_\_  
CALIBRATION STANDARD: \_\_\_\_\_ SPIKING STANDARD: \_\_\_\_\_

| SAMPLE ID | FILE ID       | DATE/TIME         | DESCRIPTION  | ID # | COMMENTS |
|-----------|---------------|-------------------|--------------|------|----------|
| 01        | RAW2:B8672894 | 02/08/96 11:05:02 | STD 461118D  |      |          |
| 02        | RAW2:B8672922 | 02/08/96 11:24:42 | STD 461118D  |      |          |
| 03        | RAW2:B8672928 | 02/08/96 11:44:23 | STD 461118D  |      |          |
| 04        | RAW2:B8672932 | 02/08/96 12:04:01 | 96LLO13-MB1  |      |          |
| 05        | RAW2:B8672939 | 02/08/96 12:23:40 | 96LLO13-MB1S |      |          |
| 06        | RAW2:B8672946 | 02/08/96 12:43:20 | 9602L916-004 |      |          |
| 07        | RAW2:B8672953 | 02/08/96 13:02:58 | 9602L916-009 |      |          |
| 08        | RAW2:B8672956 | 02/08/96 13:22:35 | 9602L916-018 |      |          |
| 09        | RAW2:B8672966 | 02/08/96 13:42:12 | 9602L916-013 |      |          |
| 10        | RAW2:B8672968 | 02/08/96 14:01:50 | INST. BLANK  |      |          |
| 11        | RAW2:B8672978 | 02/08/96 14:21:30 | 96LLO14-MB1  |      |          |
| 12        | RAW2:B8672985 | 02/08/96 14:41:07 | 96LLO14-MB1S |      |          |
| 13        | RAW2:B8672989 | 02/08/96 15:00:46 | 9602L916-021 |      |          |
| 14        | RAW2:B8672994 | 02/08/96 15:20:24 | 9602L916-022 |      |          |
| 15        | RAW2:B8673003 | 02/08/96 15:40:02 | IBLK         |      |          |
| 16        | RAW2:B8673016 | 02/08/96 15:59:43 | STD 461118D  |      |          |
| 17        | RAW2:B8673023 | 02/08/96 16:19:21 | 9602L916-024 |      |          |
| 18        | RAW2:B8673026 | 02/08/96 16:38:57 | 9602L916-026 |      |          |
| 19        | RAW2:B8673031 | 02/08/96 16:58:34 | 96LLO15-MB1  |      |          |
| 20        | RAW2:B8673040 | 02/08/96 17:18:11 | 96LLO15-MB1S |      |          |
| 21        | RAW2:B8673045 | 02/08/96 17:37:50 | 9602L963-004 |      |          |
| 22        | RAW2:B8673053 | 02/08/96 17:57:28 | 9602L963-009 |      |          |
| 23        | RAW2:B8673063 | 02/08/96 18:17:03 | 9602L963-014 |      |          |
| 24        | RAW2:B8673067 | 02/08/96 18:36:39 | 9602L963-019 |      |          |

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G. Leineweber 2/12/96

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## HPLC ANALYSIS LOG

200

INSTRUMENT #: \_\_\_\_\_  
DETECTOR: \_\_\_\_\_  
WAVELENGTH: \_\_\_\_\_  
CALIBRATION STANDARD: \_\_\_\_\_  
MOBILE PHASE: See page 1  
COLUMN TYPE: \_\_\_\_\_  
ANALYST: \_\_\_\_\_  
FLOW RATE: \_\_\_\_\_  
COLUMN SERIAL #: \_\_\_\_\_  
SPIKING STANDARD: \_\_\_\_\_

| ANALYSIS |             | DATE          | TIME     | RUN NO.  | INJ VOL        | TRAY NO | RFW SAMPLE NUMBER | CLAS ID # | LOT ID # | COMMENTS |
|----------|-------------|---------------|----------|----------|----------------|---------|-------------------|-----------|----------|----------|
| 25       | 02089646.25 | RAW2:B8673074 | 02/08/96 | 18:56:15 | 9602L963-024   | 5000    |                   |           |          |          |
| 26       | 02089646.26 | RAW2:B8673078 | 02/08/96 | 19:15:53 | 9602L916-018D1 |         |                   |           |          |          |
| 27       | 02089646.27 | RAW2:B8673083 | 02/08/96 | 19:35:30 | IBLK           |         |                   |           |          |          |
| 28       | 02089646.28 | RAW2:B8673091 | 02/08/96 | 19:55:11 | STD 461118D    |         |                   |           |          |          |
| 29       | 02089646.29 | RAW2:B8673099 | 02/08/96 | 20:14:46 | 9602L916-013D1 | 5000    |                   |           |          |          |
| 30       | 02089646.30 | RAW2:B8673105 | 02/08/96 | 20:34:22 | 9602L963-019D1 | 100     |                   |           |          |          |
| 31       | 02089646.31 | RAW2:B8673114 | 02/08/96 | 20:54:01 | 9602L963-024D1 | 100     |                   |           |          |          |
| 32       | 02089646.32 | RAW2:B8673119 | 02/08/96 | 21:13:37 | 9602L916-024D1 | 100     |                   |           |          |          |
| 33       | 02089646.33 | RAW2:B8673124 | 02/08/96 | 21:33:12 | INST. BLANK    |         |                   |           |          |          |
| 34       | 02089646.34 | RAW2:B8673131 | 02/08/96 | 21:52:48 | 9602L916-020   |         |                   |           |          |          |
| 35       | 02089646.35 | RAW2:B8673138 | 02/08/96 | 22:12:24 | 9602L916-023   | 2000    | 4000              |           |          |          |
| 36       | 02089646.36 | RAW2:B8673145 | 02/08/96 | 22:32:02 | 9602L963-030   |         |                   |           |          |          |
| 37       | 02089646.37 | RAW2:B8673152 | 02/08/96 | 22:51:38 | 9602L963-032   | 5000    |                   |           |          |          |
| 38       | 02089646.38 | RAW2:B8673155 | 02/08/96 | 23:11:14 | 9602L963-034   | 5000    |                   |           |          |          |
| 39       | 02089646.39 | RAW2:B8673166 | 02/08/96 | 23:30:49 | 9602L963-032D1 | 100     |                   |           |          |          |
| 40       | 02089646.40 | RAW2:B8673169 | 02/08/96 | 23:50:26 | INST. BLANK    |         |                   |           |          |          |
| 41       | 02089646.41 | RAW2:B9673178 | 02/09/96 | 00:10:07 | STD 461118D    |         |                   |           |          |          |
| 42       | 02089646.42 | RAW2:B9673183 | 02/09/96 | 00:29:45 | 9602L963-034D1 | 100     |                   |           |          |          |
| 43       | 02089646.43 | RAW2:B9673190 | 02/09/96 | 00:49:20 | INST. BLANK    |         |                   |           |          |          |
| 44       | 02089646.44 | RAW2:B9673195 | 02/09/96 | 01:09:01 | STD 461118D    |         |                   |           |          |          |

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# HPLC ANALYSIS LOG

201

INSTRUMENT #: \_\_\_\_\_  
 DETECTOR: \_\_\_\_\_  
 WAVELENGTH: \_\_\_\_\_  
 CALIBRATION STANDARD: \_\_\_\_\_  
 MOBILE PHASE: See page 1  
 COLUMN TYPE: \_\_\_\_\_  
 SPIKING STANDARD: \_\_\_\_\_  
 ANALYST: \_\_\_\_\_  
 FLOW RATE: \_\_\_\_\_  
 COLUMN SERIAL #: \_\_\_\_\_

| SAMPLE ID | FILE ID       | DATE/TIME         | DESCRIPTION        | IT ID # | COMMENTS |
|-----------|---------------|-------------------|--------------------|---------|----------|
| 01        | RAW2:B9673290 | 02/09/96 08:56:39 | STD 461118D        |         |          |
| 02        | RAW2:B9673299 | 02/09/96 09:16:19 | STD 461118D        |         |          |
| 03        | RAW2:B9673300 | 02/09/96 09:35:59 | STD 461118D        |         |          |
| 04        | RAW2:B9673307 | 02/09/96 09:55:39 | 9602L963-004       |         |          |
| 05        | RAW2:B9673311 | 02/09/96 10:15:18 | 9602L963-009       |         |          |
| 06        | RAW2:B9673322 | 02/09/96 10:34:57 | 9602L963-014       |         |          |
| 07        | RAW2:B9673324 | 02/09/96 10:54:36 | 9602L916-023D1 100 |         |          |
| 08        | RAW2:B9673331 | 02/09/96 11:14:13 | 96LLC014-MB1S      |         |          |
| 09        | RAW2:B9673337 | 02/09/96 11:33:51 | 96LLC017-MB1       |         |          |
| 10        | RAW2:B9673341 | 02/09/96 11:53:30 | 96LLC017-MB1S      |         |          |
| 11        | RAW2:B9673353 | 02/09/96 12:13:09 | 9602L916-006015 2  |         |          |
| 12        | RAW2:B9673374 | 02/09/96 12:32:47 | 9602L916-025 2     |         |          |
| 13        | RAW2:B9673380 | 02/09/96 12:52:24 | 9602L963-028 2     |         |          |
| 14        | RAW2:B9673391 | 02/09/96 13:12:02 | IBLK               |         |          |
| 15        | RAW2:B9673399 | 02/09/96 13:31:43 | STD 461118D        |         |          |
| 16        | RAW2:B9673415 | 02/09/96 13:51:22 | 9602L963-028 2     |         |          |
| 17        | RAW2:B9673418 | 02/09/96 14:10:59 | 96LLC016-MB1       |         |          |
| 18        | RAW2:B9673421 | 02/09/96 14:30:35 | 96LLC016-MB1S      |         |          |
| 19        | RAW2:B9673433 | 02/09/96 14:50:12 | 9602L963-027       |         |          |
| 20        | RAW2:B9673439 | 02/09/96 15:09:50 | 9602L963-029       |         |          |
| 21        | RAW2:B9673448 | 02/09/96 15:29:29 | 9602L963-031       |         |          |
| 22        | RAW2:B9673460 | 02/09/96 15:49:07 | 9602L963-033 100   |         |          |
| 23        | RAW2:B9673464 | 02/09/96 16:08:43 | 9602L963-035 100   |         |          |
| 24        | RAW2:B9673467 | 02/09/96 16:28:19 | 9602L963-033D1     |         |          |

RFW 21-21-022/B-01/82  
 REVIEWED BY/DATE G. Keimweller 2/17/96  
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WESTON®

## HPLC ANALYSIS LOG

202

INSTRUMENT #:

MOBILE PHASE: Sealag

ANALYST:

DETECTOR:

FLOW RATE:

WAVELENGTH:

COLUMN TYPE:

COLUMN SERIAL #:

CALIBRATION STANDARD

SPIKING STANDARD

| ANALYSIS |             | RUN NO.       | INJ VOL | TRAY NO. | RFW SAMPLE NUMBER | CLAS ID #         | LOT ID # | COMMENTS |
|----------|-------------|---------------|---------|----------|-------------------|-------------------|----------|----------|
| DATE     | TIME        |               |         |          |                   |                   |          |          |
| 25       | 02099646.25 | RAW2:B9673477 |         |          | 02/09/96 16:47:56 | 9602L963-035D1    |          |          |
| 26       | 02099646.26 | RAW2:B9673489 |         |          | 02/09/96 17:07:34 | IBLK              |          |          |
| 27       | 02099646.27 | RAW2:B9673495 |         |          | 02/09/96 17:27:15 | STD 461118D       |          |          |
| 28       | 02099646.28 | RAW2:B9673499 |         |          | 02/09/96 17:46:51 | 96LLC017-MB1A1    |          |          |
| 29       | 02099646.29 | RAW2:B9673513 |         |          | 02/09/96 18:06:27 | 96LLC017-MB1SA    |          |          |
| 30       | 02099646.30 | RAW2:B9673517 |         |          | 02/09/96 18:26:04 | 9602L916-006A1    |          |          |
| 31       | 02099646.31 | RAW2:B9673524 |         |          | 02/09/96 18:45:42 | 9602L916-025A1    |          |          |
| 32       | 02099646.32 | RAW2:B9673535 |         |          | 02/09/96 19:05:19 | 9602L963-026A1    |          |          |
| 33       | 02099646.33 | RAW2:B9673539 |         |          | 02/09/96 19:24:54 | 9602L963-028A1    |          |          |
| 34       | 02099646.34 | RAW2:B9673550 |         |          | 02/09/96 19:44:29 | 96LLC019-MB1      |          |          |
| 35       | 02099646.35 | RAW2:B9673560 |         |          | 02/09/96 20:04:06 | 96LLC019-MB1S     |          |          |
| 36       | 02099646.36 | RAW2:B9673569 |         |          | 02/09/96 20:23:44 | 9602L974-001 100  |          |          |
| 37       | 02099646.37 | RAW2:B9673577 |         |          | 02/09/96 20:43:21 | 9602L999-001 100  |          |          |
| 38       | 02099646.38 | RAW2:B9673581 |         |          | 02/09/96 21:02:57 | IBLK              |          |          |
| 39       | 02099646.39 | RAW2:B9673591 |         |          | 02/09/96 21:22:38 | STD 461118D       |          |          |
| 40       | 02099646.40 | RAW2:B9673604 |         |          | 02/09/96 21:42:15 | 9602L999-002 100  |          |          |
| 41       | 02099646.41 | RAW2:B9673612 |         |          | 02/09/96 22:01:53 | 9602L974-001D1    |          |          |
| 42       | 02099646.42 | RAW2:B9673622 |         |          | 02/09/96 22:21:31 | 9602L999-001A1    |          |          |
| 43       | 02099646.43 | RAW2:B9673633 |         |          | 02/09/96 22:41:09 | 9602L999-002D1    |          |          |
| 44       | 02099646.44 | RAW2:B9673641 |         |          | 02/09/96 23:00:43 | 9602L963-035D2 10 |          |          |
| 45       | 02099646.45 | RAW2:B9673645 |         |          | 02/09/96 23:20:20 | 96LLC018-MB1      |          |          |
| 46       | 02099646.46 | RAW2:B9673658 |         |          | 02/09/96 23:39:58 | 96LLC018-MB1S     |          |          |
| 47       | 02099646.47 | RAW2:B9673663 |         |          | 02/09/96 23:59:36 | 9602L952-001      |          |          |
| 48       | 02099646.48 | RAW2:BA673672 |         |          | 02/10/96 00:19:12 | 9602L952-002      |          |          |

RFW 21-21-022/B-01/92

REVIEWED BY/DATE S. Heinweh 2/12/96

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WESTON®

HPLC ANALYSIS LOG

INSTRUMENT #: \_\_\_\_\_ MOBILE PHASE: Sage 1 ANALYST: \_\_\_\_\_  
DETECTOR: \_\_\_\_\_ FLOW RATE: \_\_\_\_\_  
WAVELENGTH: \_\_\_\_\_ COLUMN TYPE: \_\_\_\_\_ COLUMN SERIAL #: \_\_\_\_\_  
CALIBRATION STANDARD \_\_\_\_\_ SPIKING STANDARD \_\_\_\_\_

| ANALYSIS |             | DATE          | TIME     | RUN NO.  | INJ VOL       | TRAY NO. | RFW SAMPLE NUMBER | CLAS ID # | LOT ID # | COMMENTS |
|----------|-------------|---------------|----------|----------|---------------|----------|-------------------|-----------|----------|----------|
|          |             |               |          |          |               |          |                   |           |          |          |
| 49       | 02099646.49 | RAW2:BA673682 | 02/10/96 | 00:38:47 | 9602L952-003  |          |                   |           |          |          |
| 50       | 02099646.50 | RAW2:BA673691 | 02/10/96 | 00:58:24 | INST. BLANK   |          |                   |           |          |          |
| 51       | 02099646.51 | RAW2:BA673693 | 02/10/96 | 01:18:05 | STD 461118D   |          |                   |           |          |          |
| 52       | 02099646.52 | RAW2:BA673703 | 02/10/96 | 01:37:43 | 9602L952-004  |          |                   |           |          |          |
| 53       | 02099646.53 | RAW2:BA673712 | 02/10/96 | 01:57:18 | 9602L952-005  |          |                   |           |          |          |
| 54       | 02099646.54 | RAW2:BA673717 | 02/10/96 | 02:16:53 | 9602L952-007  |          |                   |           |          |          |
| 55       | 02099646.55 | RAW2:BA673724 | 02/10/96 | 02:36:30 | 9602L952-008  |          |                   |           |          |          |
| 56       | 02099646.56 | RAW2:BA673734 | 02/10/96 | 02:56:09 | 9602L952-009  |          |                   |           |          |          |
| 57       | 02099646.57 | RAW2:BA673743 | 02/10/96 | 03:15:46 | 9602L952-010  |          |                   |           |          |          |
| 58       | 02099646.58 | RAW2:BA673749 | 02/10/96 | 03:35:22 | 9602L952-011  |          |                   |           |          |          |
| 59       | 02099646.59 | RAW2:BA673753 | 02/10/96 | 03:54:56 | 9602L952-012  |          |                   |           |          |          |
| 60       | 02099646.60 | RAW2:BA673765 | 02/10/96 | 04:14:33 | 9602L952-013  |          |                   |           |          |          |
| 61       | 02099646.61 | RAW2:BA673770 | 02/10/96 | 04:34:11 | INST. BLANK   |          |                   |           |          |          |
| 62       | 02099646.62 | RAW2:BA673774 | 02/10/96 | 04:53:49 | STD 461118D   |          |                   |           |          |          |
| 63       | 02099646.63 | RAW2:BA673781 | 02/10/96 | 05:13:29 | 9602L952-015  |          |                   |           |          |          |
| 64       | 02099646.64 | RAW2:BA673788 | 02/10/96 | 05:33:05 | 9602L952-015S |          |                   |           |          |          |
| 65       | 02099646.65 | RAW2:BA673792 | 02/10/96 | 05:52:42 | 9602L952-015T |          |                   |           |          |          |
| 66       | 02099646.66 | RAW2:BA673797 | 02/10/96 | 06:12:23 | 9602L952-015T |          |                   |           |          |          |
| 67       | 02099646.67 | RAW2:BA673805 | 02/10/96 | 06:32:01 | 9602L952-016  |          |                   |           |          |          |
| 68       | 02099646.68 | RAW2:BA673810 | 02/10/96 | 06:51:38 | INST. BLANK   |          |                   |           |          |          |
| 69       | 02099646.69 | RAW2:BA673815 | 02/10/96 | 07:11:18 | STD 461118D   |          |                   |           |          |          |

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REVIEWED BY/DATE G. Heinwelder 2/12/96

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## MOBILE PHASE:

**ANALYST:**

**FLOW RATE:**

COLLIMN TYPE:

**COLUMN SERIAL #:**

[illegible]

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REVIEWED BY/DATE C. Kinnear 2/12/96

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# WESTON®

## HPLC ANALYSIS LOG

INSTRUMENT #: HPLC #2  
 DETECTOR: HT 1650 UV  
 WAVELENGTH: 254 nm  
 CALIBRATION STANDARD 46113/41024011

MOBILE PHASE: 60% H<sub>2</sub>O / 40% ACN  
30°C  
 COLUMN TYPE: Zorbax C8 4.6mm x 25cm  
 SPIKING STANDARD NK

ANALYST: G. Keimig  
 FLOW RATE: 1.5 ml/min  
 COLUMN SERIAL #: L17344

| 01 | 02069602.01 | RAW2:B6672149 | 02/06/96 09:41:44 | STD 461130F   |  |
|----|-------------|---------------|-------------------|---------------|--|
| 02 | 02069602.02 | RAW2:B6672161 | 02/06/96 10:19:20 | STD 461130E   |  |
| 03 | 02069602.03 | RAW2:B6672171 | 02/06/96 10:56:55 | STD 461130D   |  |
| 04 | 02069602.04 | RAW2:B6672180 | 02/06/96 11:34:29 | STD 461130C   |  |
| 05 | 02069602.05 | RAW2:B6672186 | 02/06/96 12:12:05 | STD 461130B   |  |
| 06 | 02069602.06 | RAW2:B6672197 | 02/06/96 12:49:40 | STD 461130A   |  |
| 07 | 02069602.07 | RAW2:B6672208 | 02/06/96 13:27:15 | STD 41024011F |  |
| 08 | 02069602.08 | RAW2:B6672221 | 02/06/96 14:28:04 | STD 41024011E |  |
| 09 | 02069602.09 | RAW2:B6672232 | 02/06/96 14:50:37 | STD 41024011D |  |
| 10 | 02069602.10 | RAW2:B6672236 | 02/06/96 15:13:12 | STD 41024011C |  |
| 11 | 02069602.11 | RAW2:B6672243 | 02/06/96 15:35:47 | STD 41024011B |  |
| 12 | 02069602.12 | RAW2:B6672251 | 02/06/96 15:58:21 | STD 41024011A |  |
| 13 | 02069602.13 | RAW2:B6672258 | 02/06/96 16:20:55 | OX            |  |
| 14 | 02069602.14 | RAW2:B6672264 | 02/06/96 16:43:29 | 9601L838-001  |  |
| 15 | 02069602.15 | RAW2:B6672274 | 02/06/96 17:06:02 | 9601L838-002  |  |
| 16 | 02069602.16 | RAW2:B6672281 | 02/06/96 17:28:37 | 9601L838-004  |  |
| 17 | 02069602.17 | RAW2:B6672292 | 02/06/96 17:51:12 | 9601L838-006  |  |
| 18 | 02069602.18 | RAW2:B6672301 | 02/06/96 18:13:43 | 9601L838-008  |  |
| 19 | 02069602.20 | RAW2:B6672318 | 02/06/96 18:58:48 | INST. BLANK   |  |
| 20 | 02069602.21 | RAW2:B6672324 | 02/06/96 19:21:22 | STD 461130D   |  |
| 21 | 02069602.22 | RAW2:B6672339 | 02/06/96 19:43:56 | STD 41024011D |  |

### COMMENTS

06330  
 02266  
 4-NT  
 02F06

G. Keimig 2/7/96

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G. Keimig 2/12/96



## HPLC ANALYSIS LOG

MOBILE PHASE: 200 Page 8

ANALYST: \_\_\_\_\_

**FLOW RATE:** \_\_\_\_\_

**COLUMN SERIAL #:** \_\_\_\_\_

### SPIKING STANDARD

~~Substance Abuse~~

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WESTON®

HPLC ANALYSIS LOG

INSTRUMENT #: \_\_\_\_\_ ANALYST: \_\_\_\_\_  
DETECTOR: \_\_\_\_\_ MOBILE PHASE: Salicyls FLOW RATE: \_\_\_\_\_  
WAVELENGTH: \_\_\_\_\_ COLUMN TYPE: \_\_\_\_\_ COLUMN SERIAL #: \_\_\_\_\_  
CALIBRATION STANDARD \_\_\_\_\_ SPIKING STANDARD \_\_\_\_\_

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| SAMPLE ID | FILE ID     | DATE/TIME         | DESCRIPTION    | DT ID # | COMMENTS |
|-----------|-------------|-------------------|----------------|---------|----------|
| 01        | 02109602.01 | 02/10/96 09:26:27 | STD 461130D    |         |          |
| 02        | 02109602.02 | 02/10/96 09:49:04 | STD 461130D    |         |          |
| 03        | 02109602.03 | 02/10/96 10:11:41 | STD 461130D    |         |          |
| 04        | 02109602.04 | 02/10/96 10:34:19 | 9602L916-025   |         |          |
| 05        | 02109602.05 | 02/10/96 10:56:54 | 9602L916-026D1 |         |          |
| 06        | 02109602.06 | 02/10/96 11:19:29 | 9602L952-004   |         |          |
| 07        | 02109602.07 | 02/10/96 11:42:05 | 9602L952-009   |         |          |
| 08        | 02109602.08 | 02/10/96 12:04:38 | 9602L952-010   |         |          |
| 09        | 02109602.09 | 02/10/96 12:27:11 | 9602L963-032D1 |         |          |
| 10        | 02109602.10 | 02/10/96 12:49:46 | 9602L963-034D1 |         |          |
| 11        | 02109602.11 | 02/10/96 13:12:22 | IBLK           |         |          |
| 12        | 02109602.12 | 02/10/96 13:34:57 | STD 461130D    |         |          |

RFW 21-21-022/B-01/92

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**WESTON**

**Standards Preparation Records**







WESTON®

# HPLC STANDARDS PREPARATION LOGBOOK Preparation of Standard Dilutions (Single Component)

Logbook #: 4102

| COMPOUND         | STANDARD DILUTION I.D. | PARENT STANDARD I.D. | PARENT CONC. (w/units) | PARENT VOLUME (mL) | TOTAL VOLUME (mL) | SOLVENT      | PREPARED STANDARD CONC. (w/units) | DATE/ ANALYST | REVIEWED BY/DATE | DATE REMOVED |
|------------------|------------------------|----------------------|------------------------|--------------------|-------------------|--------------|-----------------------------------|---------------|------------------|--------------|
| Kerosene         | 41023801               | 41021307             | 100 mg/mL              | 100 µL             | 10 mL             | Hexane       | 1000 µg/mL                        | 5/25/95 Gm    | 6/2/95 Gm        | 8/1/95 Gm    |
| Triphenylene     | 41023802               | 41021507             | 1000 µg/mL             | 1250 µL            | 25 mL             | ACN          | 50 µg/mL                          | 5/26/95 Gm    | 6/2/95 Gm        | 11/21/95 Gm  |
| KEROSENE         | 41023803               | AccuStandard 025-235 |                        | -                  | 1 mL              | DCM          | 20 µg/mL                          | 6/14/95 Gm    | 6/21/95 Gm       | 2/1/96 Gm    |
| Diesel fuel      | 41023804               | AccuStandard 055-314 |                        | -                  | 5 mL              | DCM          | 50 µg/mL                          | 6/14/95 Gm    | 6/21/95 Gm       | 2/1/96 Gm    |
| GRAVUE           | 41023805               | AccuStd 123-180      |                        |                    | 1 mL              | Isocetane    | 100 µg/mL                         | 6/14/95 Gm    | 6/21/95 Gm       | 2/1/96 Gm    |
| DIESEL FUEL      | 41023806               | AccuStd 084-259      |                        |                    | 1 mL              | Isocetane    | 100 µg/mL                         | 6/14/95 Gm    | 6/21/95 Gm       | 2/1/96 Gm    |
| JET TURBINE FUEL | 41023807               | AccuStd 123-192      |                        |                    | 1 mL              | Isocetane    | 100 µg/mL                         | 6/14/95 Gm    | 6/21/95 Gm       | 2/1/96 Gm    |
| HMX              | 41023808               | EM Science 114-237   |                        |                    | 1 mL              | MeOH/ACN 1:1 | 493 µg/mL                         | 6/14/95 Gm    | 6/21/95 Gm       | 11/6/95 Gm   |
| RDX              | 41023809               | EM Science 015-032   |                        |                    | 1 mL              |              | 986 µg/mL                         | 6/14/95 Gm    | 6/21/95 Gm       | 11/6/95 Gm   |
| 1,3,5-TNB        | 41023810               | EM Science 114-231   |                        |                    | 1 mL              |              | 1024 µg/mL                        | 6/14/95 Gm    | 6/21/95 Gm       | 11/6/95 Gm   |
| 1,3-DNB          | 41023811               | EM Science 035-207   |                        |                    | 1 mL              |              | 922 µg/mL                         | 6/14/95 Gm    | 6/21/95 Gm       | 11/6/95 Gm   |

Date removed is the date standards are given to the Waste Disposal Unit for disposition.

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# HPLC STANDARDS PREPARATION LOGBOOK

## Preparation of Standard Dilutions (Single Component)

Logbook #: 410222

| COMPOUND        | STANDARD DILUTION I.D. | PARENT STANDARD I.D. | PARENT CONC. (w/units) | PARENT VOLUME (mL) | TOTAL VOLUME (mL) | SOLVENT    | PREPARED STANDARD CONC. (w/units) | DATE/ ANALYST | REVIEWED BY/DATE | DATE REMOVED <sup>1</sup> |
|-----------------|------------------------|----------------------|------------------------|--------------------|-------------------|------------|-----------------------------------|---------------|------------------|---------------------------|
| Nitrobenzene    | 41023901               | EM Science 114-219   | 2000                   | 1                  | 1                 | MCH/AN 1:1 | 1000                              | 6/14/95       | GM 9/7/95        | 6/14                      |
| Tetral          | 41023902               | EM Science 025-101   | 1000                   | 1                  | 1                 |            | 1000                              | 6/14/95       | GM 9/7/95        | 6/14                      |
| 2-Amino-4,6-DNT | 41023903               | EM Science 104-266   | 1002                   | 1                  | 1                 |            | 1002                              | 6/14/95       | GM 9/7/95        | 6/14                      |
| 1-Amino-2,6-DNT | 41023904               | EM Science 114-239   | 1000                   | 1                  | 1                 |            | 1000                              | 6/14/95       | GM 9/7/95        | 6/14                      |
| TNT             | 41023905               | EM Science 114-220   | 1004                   | 1                  | 1                 |            | 1004                              | 6/14/95       | GM 9/7/95        | 6/14                      |
| 2,6-DNT         | 41023906               | EM Science 124-511   | 1000                   | 1                  | 1                 |            | 1000                              | 6/14/95       | GM 9/7/95        | 6/14                      |
| 2,4-DNT         | 41023907               | EM Science 015-266   | 988                    | 1                  | 1                 |            | 988                               | 6/14/95       | GM 9/7/95        | 6/14                      |
| 2-Nitrotoluene  | 41023908               | EM Science 104-334   | 990                    | 1                  | 1                 |            | 990                               | 6/14/95       | GM 9/7/95        | 6/14                      |
| 1-Nitrotoluene  | 41023909               | EM Science 015-152   | 990                    | 1                  | 1                 |            | 990                               | 6/14/95       | GM 9/7/95        | 6/14                      |
| 3-Nitrotoluene  | 41023910               | EM Science 114-238   | 993                    | 1                  | 1                 |            | 993                               | 6/14/95       | GM 9/7/95        | 6/14                      |
| Ethylbenzene    | 41023911               | 41023911             | next                   |                    |                   |            |                                   |               | GM 2/2/96        | 6/14                      |

<sup>1</sup>Date removed is the date standards are given to the Waste Disposal Unit for disposition.

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WESTON®

# HPLC STANDARDS PREPARATION LOG Preparation of Stock Mixture Solution (Multi-Component)

214

MIXTURE I.D.#: 461130 Explosive Conf. Mix EXPIRATION DATE: 6/1/96  
DATE/ANALYST: 1/3/96 G. Leinweber DATE REMOVED:
Logbook #: 4611

| COMPONENT       | DESCRIPTION | STOCK PARENT<br>or NEAT<br>ID | % Purity<br>(neat only)<br>Conc. | STANDARD<br>WEIGHT/VOLUME<br>(w/units) | FINAL<br>VOLUME<br>(mL) | SOLVENT | COMPONENT<br>CONC. (w/units) |
|-----------------|-------------|-------------------------------|----------------------------------|----------------------------------------|-------------------------|---------|------------------------------|
| HMX             |             | 41023808                      | 993 ug/mL                        | 276.9 uL                               | 5 mL                    | ACN     | 5.5 ug/mL                    |
| RDX             |             | 41023809                      | 986                              | 136.9                                  |                         |         | 27                           |
| 1,3,5-TNB       |             | 41023810                      | 984                              | 32.0                                   |                         |         | 6.3                          |
| 1,3-DNB         |             | 41023811                      | 982                              | 32.1                                   |                         |         | 6.3                          |
| Nitrobenzene    |             | 41023901                      | 1000                             | 32.5                                   |                         |         | 6.5                          |
| Tetryl          |             | 41023902                      | 1000                             | 94.0                                   |                         |         | 18.8                         |
| 2-Amino-4,6-DNT |             | 41023903                      | 1002                             | 31.4                                   |                         |         | 6.3                          |
| 4 NT            |             | 41023905                      | 1001                             | 31.5                                   |                         |         | 6.3                          |
| 2,6-DNT         |             | 41023906                      | 1000                             | 32.5                                   |                         |         | 6.5                          |
| 2,4-DNT         |             | 41023907                      | 988                              | 31.9                                   |                         |         | 6.3                          |
|                 |             |                               |                                  |                                        |                         |         |                              |
|                 |             |                               |                                  |                                        |                         |         |                              |

Date removed is the date the standards are given to the Waste Disposal Unit for disposition.

REVIEWED BY/DATE:

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RFW 21-21-036/D-03/94

# HPLC STANDARDS LOGBOOK NEAT STANDARDS DOCUMENTATION

Logbook #: 402

1011

| COMPOUND                 | WESTON STANDARD ID | VENDOR                    | VENDOR LOT ID | PURITY % | EXPIRATION DATE | DATE RECEIVED | DATE REMOVED |
|--------------------------|--------------------|---------------------------|---------------|----------|-----------------|---------------|--------------|
| Nitroglycerin            | 41020701           | EM Science<br>EPH80880    | 104-275       |          | 9/1/98          | 8/31/95       |              |
| Thylene Oxide            | 41020702           | EM Science<br>EPS00745    | 105-168       |          | ongoing         | 10/17/95      |              |
| 7H-Dibenzo(c,g)carbazole | 41020703           | EM Science<br>EPH00134    | 920-331       | 99.9     | ongoing         | 10/31/95      |              |
| Dibenzo(a,h)pyrene       | 41020704           | EM Science<br>EPH00136    | 06110         | -        | ongoing         | 10/31/95      |              |
| Dibenzo(a,i)pyrene       | 41020705           | Radian<br>ERD-001         | HKY-2604457   | 99%      |                 | 01/03/95      |              |
| 3-Methylcholanthrene     | 41020706           | EM Science<br>EPH00112    | 111-098       | 98.7     | ongoing         | 01/03/95      |              |
| Benzo(a)fluoranthene     | 41020707           | Radian<br>ERN-005         | AP-24573-50   | 98       |                 | 01/03/95      |              |
| Dibenz(a,h)acridine      | 41020708           | Radian<br>ERD-013         | HKY-27456-49  | 99       |                 | 01/03/95      |              |
| Dibenz(a,i)acridine      | 41020709           | Radian<br>ERD-014         | HKY-27456-47  | 99       |                 | 01/03/95      |              |
| 1,2-Dinitrobenzene       | 41020710           | ben Standard<br>M-8330-55 | 095-233       | 98.6     | ongoing         | 01/03/95      |              |

RFW 21-21-036/F-03/94

REVIEWED BY/DATE: Chad Adams

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# HPLC STANDARDS PREPARATION LOGBOOK

## Preparation of Standard Dilutions (Single Component)

Logbook #: 4102

| COMPOUND                      | STANDARD DILUTION I.D. | PARENT STANDARD I.D. | PARENT CONC. (w/units)          | PARENT VOLUME (mL) | TOTAL VOLUME (mL) | SOLVENT                         | PREPARED STANDARD CONC. (w/units) | DATE/ ANALYST | REVIEWED BY/DATE | DATE REMOVED  |
|-------------------------------|------------------------|----------------------|---------------------------------|--------------------|-------------------|---------------------------------|-----------------------------------|---------------|------------------|---------------|
| RDX                           | 41024001               | 41020304             | 1002 µg/mL                      | 27 µL              | 1 mL              | ACN                             | 27.05 µg/mL                       | 8/22/95<br>Gm |                  | 8/22/96<br>Gm |
| RDX                           | 41024002               | 41024001             | 27.05 µg/mL<br>1000 µg/mL<br>Gm | 100 µL             | 1 mL              | ACN                             | 2.705 µg/mL                       | 8/22/95<br>Gm |                  | 8/22/96<br>Gm |
| Picric Acid                   | 41024003               | 41021708             | 1010 µg/mL                      | 1 mL               | 10 mL             | ACN                             | 101 µg/mL                         | 8/22/95<br>Gm | 9/5/95           |               |
| Picric Acid                   | 41024004               | 41020609             | 1000 µg/mL                      | 1 mL               | 10 mL             | ACN                             | 100 µg/mL                         | 8/22/95<br>Gm | 9/5/95           |               |
| 2-Hydroxy-5-nitrobenzoic acid | 41024005               | 41020703             | 1000 µg/mL                      |                    |                   |                                 |                                   |               |                  |               |
| Triphenylene                  | 41024006               | 41021907             | 1000 µg/mL                      | 1250 µL            | 25 mL             | ACN                             | 50 µg/mL                          | 8/22/95<br>Gm | 9/21/95          |               |
| Triphenylene (6 µm lmc)       | 41024007               | 41021908             | 500 µg/mL                       | 1 mL               | 100 µL            | ACN                             | 5 µg/mL                           | 8/22/95<br>Gm |                  |               |
| MOTOR OIL 10W-30              | 41024008               | 41020103             |                                 |                    |                   |                                 |                                   |               |                  |               |
| 1,2-DNB surr                  | 41024009               | 41020710             | 1003 µg/mL                      | 0.810              | 10 mL             | ACN                             | 81.243 µg/mL                      | 8/22/95<br>Gm | 12/21/95         |               |
| p-Terphenyl                   | 41024010               | 39850303             | 50 µg/mL                        | 0.0125 g           | 25 µL             | Acetone (w/NaHCO <sub>3</sub> ) | 50 µg/mL                          | 8/22/95<br>Gm | 1/4/96           |               |
| 4-Nitrotoluene                | 41024011               | 41023909             | 1.0 mg/mL                       | 74.7 µL            | 1 mL              | ACN                             | 74.7 µg/mL                        | 8/22/95<br>Gm | 2/2/96           |               |

Date removed is the date standards are given to the Waste Disposal Unit for disposition.

RFW 21-21-036/C-03/94

**WESTON**

**Preparation Logs**



WESTON

## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055

Extract Date: 2/7/96 Extraction Batch #: 46440.3 SDG File Y/N: N/A  
 Analyst: F. Hym Test: 4330 Method: RSC Solvent: AcN AAPrep: 1

| RFW # | (mL)<br>Vol-I      | Mtrx | pH | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult | Spike<br>Mult | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-------|--------------------|------|----|-----------------------------|--------------|---------------|----------------------|---------------|------------|
| 1     | Blank (7.0)        | w    |    | 1.70                        | 1.0          | 1.0           | 10                   | 2             | N          |
| 2     | Blank Spike (7.0)  |      |    | 1                           |              | 1.0           |                      |               |            |
| 3     | 9602L916-004 (580) |      |    | 1                           |              |               |                      |               |            |
| 4     | -009 (330)         |      |    | 1                           |              |               |                      |               |            |
| 5     | -013* (400)        |      |    | 1                           |              |               |                      |               |            |
| 6     | -018 (310)         |      |    | 1                           |              |               |                      |               |            |
| 7     |                    |      |    |                             |              |               |                      |               |            |
| 8     |                    |      |    |                             |              |               |                      |               |            |
| 9     |                    |      |    |                             |              |               |                      |               |            |
| 10    |                    |      |    |                             |              |               |                      |               |            |
| 11    |                    |      |    |                             |              |               |                      |               |            |
| 12    |                    |      |    |                             |              |               |                      |               |            |
| 13    |                    |      |    |                             |              |               |                      |               |            |
| 14    |                    |      |    |                             |              |               |                      |               |            |
| 15    |                    |      |    |                             |              |               |                      |               |            |
| 16    |                    |      |    |                             |              |               |                      |               |            |
| 17    |                    |      |    |                             |              |               |                      |               |            |
| 18    |                    |      |    |                             |              |               |                      |               |            |
| 19    |                    |      |    |                             |              |               |                      |               |            |
| 20    |                    |      |    |                             |              |               |                      |               |            |
| 21    |                    |      |    |                             |              |               |                      |               |            |
| 22    |                    |      |    |                             |              |               |                      |               |            |
| 23    |                    |      |    |                             |              |               |                      |               |            |
| 24    |                    |      |    |                             |              |               |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: N/AEnd time: 1

BN Fraction (Date/Time/Initials)

Start time: N/AEnd time: 1

## Extraction Information

(Date/Analyst)

Filtration: N/ABoildown: 1Blowdown: 1GPC Ready: 1GPC Cleanup: 1GPC #: 1After GPC Boildown: 1After GPC Blowdown: 1

Acid/Florisil/Alumina Cleanup:

N/APrep Sheet: F. Hym 2/8/96GPC Lab ID #: N/AFlorisil Lot #: 1Florisil Lab ID #: 1

\* For Surr/Spike Mult, refer to  
Table 1 / 2 / 3 (circle one)

COMMENTS: Sample brought to Volume (7.2mL) w/ DI H<sub>2</sub>O

\* Bright yellow Extract → potentially high tyf + Cmpds

Surrogate: 50 ul -162409 Spikes: 125 ul 461129B Witness: F. Hym 2/8/96  
 This Page Reviewed By/Date: [Signature] Reviewed Against LIMS By/DATE: [Signature]

SAMPLE EXTRACTION RECORD

Sheet no.: 1

219

Extract. Date: 02/07/96 Extraction Batch No: 96LLC013 Analyst: FK Method: \*\*\*\*

Test: 0833 Cleanup Date: Analyst: Client: COE-HOT GAS

LIMS Report Date: 02/15/96 Solvent: Adsorbent:

| Sample No:            | Client Name<br>Client ID | pH | Initial Surr.<br>WT/VOL | Spike Final<br>Mult. VOL | Split<br>Mult. | GPC<br>Y/N | Solids<br>Factor | C/D |
|-----------------------|--------------------------|----|-------------------------|--------------------------|----------------|------------|------------------|-----|
| 9602L916- COE-HOT GAS |                          |    |                         |                          |                |            |                  |     |
| 004 0                 | AFTOUT-EXP/SV-R1-CND     | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 0.0 |
| 009 0                 | IN/OUT-EXP/SV-SB-CND     | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 0.0 |
| 013 0                 | AFTIN-EXP-R1-CND         | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 0.0 |
| 018 0                 | AFTIN-EXP-RIMS-CND       | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 0.0 |
| 96LLC013-MB1 0        | BLK                      | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 0.0 |
| 96LLC013-MB1 0S       | BLK                      | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 0.0 |

Comments:

Surrogate: 50 uL 41024009

Spike: 125 uL 461129B

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |

WESTON

## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055

Extract Date: 2/7/96 Extraction Batch #: 16LUC014 SDG File Y/N: \_\_\_\_\_  
 Analyst: Schell Test: 3330 Method: 5000 Solvent: ACU AAPrep: \_\_\_\_\_

| RFW #           | Mtrx | pH | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N | Acid Fraction or Pest/PCB<br>or LC (Date/Time/Initials) |
|-----------------|------|----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|---------------------------------------------------------|
| 1: 9602L916-021 | Air  |    |                             | 10                |                    | 100                  | 2             | N          | Start time: _____                                       |
| 2: 022          |      |    |                             |                   |                    |                      |               |            | End time: _____                                         |
| 3: 024          |      |    |                             |                   |                    |                      |               |            | BN Fraction (Date/Time/Initials)                        |
| 4: 026          |      |    |                             |                   |                    |                      |               |            | Start time: _____                                       |
| 5: Blank        |      |    |                             |                   |                    |                      |               |            | End time: _____                                         |
| 6: BS           |      |    |                             | 10                |                    |                      |               |            | Extraction Information                                  |
| 7:              |      |    |                             |                   |                    |                      |               |            | (Date/Analyst)                                          |
| 8:              |      |    |                             |                   |                    |                      |               |            | Filtration: _____                                       |
| 9:              |      |    |                             |                   |                    |                      |               |            | Bolldown: _____                                         |
| 10:             |      |    |                             |                   |                    |                      |               |            | Blowdown: _____                                         |
| 11:             |      |    |                             |                   |                    |                      |               |            | GPC Ready: _____                                        |
| 12:             |      |    |                             |                   |                    |                      |               |            | GPC Cleanup: _____                                      |
| 13:             |      |    |                             |                   |                    |                      |               |            | GPC #: _____                                            |
| 14:             |      |    |                             |                   |                    |                      |               |            | After GPC Bolldown: _____                               |
| 15:             |      |    |                             |                   |                    |                      |               |            | After GPC Blowdown: _____                               |
| 16:             |      |    |                             |                   |                    |                      |               |            | Acid/Florisil/Alumina Cleanup: _____                    |
| 17:             |      |    |                             |                   |                    |                      |               |            | Prep Sheet: <u>2/7/96</u>                               |
| 18:             |      |    |                             |                   |                    |                      |               |            | GPC Lab ID #: _____                                     |
| 19:             |      |    |                             |                   |                    |                      |               |            | Florisil Lot #: _____                                   |
| 20:             |      |    |                             |                   |                    |                      |               |            | Florisil Lab ID #: _____                                |
| 21:             |      |    |                             |                   |                    |                      |               |            |                                                         |
| 22:             |      |    |                             |                   |                    |                      |               |            |                                                         |
| 23:             |      |    |                             |                   |                    |                      |               |            |                                                         |
| 24:             |      |    |                             |                   |                    |                      |               |            |                                                         |

\* For Surr/Spike Mult, refer to Table 1 / 2 / 3 (circle one)

COMMENTS: Composite 160 + filter to the above numbered RFW. See COC for original sample ID. 2/7/96  
 ON: 1550 2/7/96  
 OFF: 0950 2/7/96

Surrogate: 40.1910207W 1.2018 @ 1000 <sup>ng</sup>/mL Spike: 1.25 mL 461129B Witness: \_\_\_\_\_  
 This Page Reviewed By/Date: 2/7/96 Reviewed Against LIMS By/DATE: 2/7/96

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 02/07/96

Extraction Batch No: 96LLC014

Analyst: CS

Method: \*\*\*\*

Test: 0833

Cleanup Date:

Analyst:

Client: COE-HOT GAS

LIMS Report Date: 02/08/96

Solvent: ACN

Adsorbent:

| Sample No:            | Client Name<br>Client ID | pH | Initial Surr.<br>WT/VOL | Surr.<br>Mult. | Spike Final<br>Mult. | Final Split<br>VOL | GPC<br>Y/N | % Solid | C/D<br>FACTOR |
|-----------------------|--------------------------|----|-------------------------|----------------|----------------------|--------------------|------------|---------|---------------|
| 9602L916- COE-HOT GAS |                          |    |                         |                |                      |                    |            |         |               |
| 021 0                 | AFTOUT-EXP/SV-R1-FX      | 7  | 10.0                    | 10.0           | 100                  | 2.0                | N          | 200.0   |               |
| 022 0                 | IN/OUT-EXP/SV-SB-FX      | 7  | 10.0                    | 10.0           | 100                  | 2.0                | N          | 200.0   |               |
| 024 0                 | AFTIN-EXP-R1-FX          | 7  | 10.0                    | 10.0           | 100                  | 2.0                | N          | 200.0   |               |
| 026 0                 | AFTIN-EXP-RIMS-FX        | 7  | 10.0                    | 10.0           | 100                  | 2.0                | N          | 200.0   |               |
| 96LLC014-MB1 0        |                          | 7  | 10.0                    | 10.0           | 100                  | 2.0                | N          | 200.0   |               |
| 96LLC014-MB1 0S       |                          | 7  | 10.0                    | 10.0           | 100                  | 2.0                | N          | 200.0   |               |

Comments: XAD + FILTER SONC 18 HRS W/100mL ACN

Surrogate: 40 uL 41020710 1,2-DNB @ 1000 ug/mL

Spike: 1.25 mL 461129B

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |

*Handwritten signature*

221

Extract Date: 2/8/96 Extraction Batch #: 96LLC017 SDG File Y/N: \_\_\_\_\_  
 Analyst: G. Weinmeyer Test: 08330 Method: KD Solvent: ACN AAPrep: 2/8/96

| RFW # | Mtrx         | pH  | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-------|--------------|-----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|
| 1     | 96022916-006 | Sdo | 370                         | 1                 |                    | 10                   | 2             | W          |
| 2     | -020         |     | 210                         |                   |                    |                      |               |            |
| 3     | -023         |     | 240                         |                   |                    |                      |               |            |
| 4     | -025         |     | 220                         |                   |                    |                      |               |            |
| 5     | 96022963-026 |     | 240                         |                   |                    |                      |               |            |
| 6     | -028         |     | 210                         |                   |                    |                      |               |            |
| 7     | -030         |     | 180                         |                   |                    |                      |               |            |
| 8     | -032         |     | 235                         |                   |                    |                      |               |            |
| 9     | -034         |     | 325                         |                   |                    |                      |               |            |
| 10    | Blank        |     | 200                         |                   |                    |                      |               |            |
| 11    | Blank spike  |     | 200                         |                   | 1                  |                      |               |            |
| 12    |              |     |                             |                   |                    |                      |               |            |
| 13    |              |     |                             |                   |                    |                      |               |            |
| 14    |              |     |                             |                   |                    |                      |               |            |
| 15    |              |     |                             |                   |                    |                      |               |            |
| 16    |              |     |                             |                   |                    |                      |               |            |
| 17    |              |     |                             |                   |                    |                      |               |            |
| 18    |              |     |                             |                   |                    |                      |               |            |
| 19    |              |     |                             |                   |                    |                      |               |            |
| 20    |              |     |                             |                   |                    |                      |               |            |
| 21    |              |     |                             |                   |                    |                      |               |            |
| 22    |              |     |                             |                   |                    |                      |               |            |
| 23    |              |     |                             |                   |                    |                      |               |            |
| 24    |              |     |                             |                   |                    |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

## Extraction Information

(Date/Analyst)

Filtration: \_\_\_\_\_

Boildown: \_\_\_\_\_

Blowdown: \_\_\_\_\_

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Boildown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup: \_\_\_\_\_

Prep Sheet: 2/9/96 Gm

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
Table 1 / 2 / 3 (circle one)

COMMENTS: DCM/ACETONE SD:SD used for B & BS

All initial volumes to be logged in as 1 for total wt.

Water in all samples requiring Sodium Sulfate filtering

Surrogate: Sub 410219/120NB Spike: 461129B 125 uL Witness: \_\_\_\_\_

This Page Reviewed By/Date: 2/12/96 Reviewed Against LIMS By/DATE: 2/12/96

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 02/08/96 Extraction Batch No: 96LLC017 Analyst: GL Method: \*\*\*\*

Test: 0833 Cleanup Date: Analyst: Client: COE-HOT GAS

LIMS Report Date: 02/09/96 Solvent: DCM/ACETONE TO ACN Adsorbent:

| Sample No:            | Client Name          | Client ID | pH     | Initial Surr. | Spike Final | Split | GPC | C/D    |
|-----------------------|----------------------|-----------|--------|---------------|-------------|-------|-----|--------|
|                       |                      |           | WT/VOL | Mult.         | Mult.       | VOL   | Y/N | Solids |
|                       |                      |           |        |               |             |       |     | FACTOR |
| 9602L916- COE-HOT GAS |                      |           |        |               |             |       |     |        |
| 006 0                 | IN/OUT-EXP/SV-SB-ACE | 7         | 1      | 1.0           | 10          | 2.0   | N   | 0.0    |
| 020 0                 | AFTOUT-EXP/SV-R1-FB  | 7         | 1      | 1.0           | 10          | 2.0   | N   | 0.0    |
| 023 0                 | AFTIN-EXP-R1-FB      | 7         | 1      | 1.0           | 10          | 2.0   | N   | 20.0   |
| 025 0                 | AFTIN-EXP-RIMS-FB    | 7         | 1      | 1.0           | 10          | 2.0   | N   | 20.0   |
| 9602L963- COE-HOT GAS |                      |           |        |               |             |       |     |        |
| 026 0                 | AFTOUT-EXPLSV-R2-FB  | 7         | 1      | 1.0           | 10          | 2.0   | N   | 20.0   |
| 028 0                 | AFTOUT-EXPLSV-R3-FB  | 7         | 1      | 1.0           | 10          | 2.0   | N   | 20.0   |
| 030 0                 | AFTOUT-EXPLSV-BT-FB  | 7         | 1      | 1.0           | 10          | 2.0   | N   | 20.0   |
| 032 0                 | AFTIN-EXP-R2-FB      | 7         | 1      | 1.0           | 10          | 2.0   | N   | 0.0    |
| 034 0                 | AFTIN-EXP-R3-FB      | 7         | 1      | 1.0           | 10          | 2.0   | N   | 0.0    |
| 96LLC017-MB1 0        | BLK                  | 7         | 1      | 1.0           | 10          | 2.0   | N   | 20.0   |
| 96LLC017-MB1 0S       | BLK                  | 7         | 1      | 1.0           | 10          | 2.0   | N   | 20.0   |

Comments: ALL REQUIRED FILTRATION THROUGH SODIUM SULFATE

Surrogate: 50UL 41024101 1,2-DNB

Spike: 125UL 461129B

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
| N/A                  |                 |           |             |           |                     |

6/22/96

**WESTON**

**Other/Miscellaneous**

**WESTON**

**End of Data Package**



## EXPLOSIVES: COMPLETE SDG FILE (CSF) INVENTORY SHEET

|                  |                                                |
|------------------|------------------------------------------------|
| LABORATORY NAME: | <u>Roy F. Weston, Inc., Analytics Division</u> |
| CITY/STATE:      | <u>Lionville, PA</u>                           |
| CASE/SDG NO.:    | <u>92061963</u>                                |
| CLIENT NAME:     | <u>COE-H&amp;G</u>                             |
| WORK ORDER NO.:  | <u>02281-012-012-1200</u>                      |
| METHOD BASED ON: | <u>SW8330 -Explosives By HPLC</u>              |

All documents in the Client's copy of the complete SDG file must be legible, clearly labeled, paginated, single-sided original documents; or of sufficient copy quality to be reproducible to fourth generation copies. (Purge file documents, e.g., original-copy chain-of-custody, etc. assembled per specific contract request only.)

| CLIENT:<br>SDG No.: |                                                                                                                                                                                                                                                                                               | Page Nos |     | Check (initials/date)                                                                                                                              |        |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------|--------|
|                     |                                                                                                                                                                                                                                                                                               | From     | To  | Lab                                                                                                                                                | Client |
| 1                   | Cover Page (Lab Chron)                                                                                                                                                                                                                                                                        | 1        | 2   | <u>[initials]</u> 3-9-96                                                                                                                           |        |
| 2                   | Table of Contents                                                                                                                                                                                                                                                                             | 3        | 3   |                                                                                                                                                    |        |
| 3                   | Case Narrative                                                                                                                                                                                                                                                                                | 4        | 9   |                                                                                                                                                    |        |
| 4                   | Shipping, Receiving, and Custody Records <ul style="list-style-type: none"> <li>• Lab Chain of Custody/Work Request</li> <li>• Client Custody Reports/Packing Lists</li> <li>• Sample Tags, if applicable</li> <li>• Airbills</li> </ul>                                                      | 10       | 14  | <u>[initials]</u> 10-20-96<br><u>[initials]</u> 10-23-96                                                                                           |        |
| 5                   | Explosives Sample Data/QC Summary <ul style="list-style-type: none"> <li>• Data Summary (LIMS Summary Report)</li> <li>• Surrogate %Recovery Summary (Form II)</li> <li>• MS/MSD Summary (Form III)</li> <li>• BS/BSD Summary (Form III)</li> <li>• Method Blank Summary (Form IV)</li> </ul> | 15       | 25  | <u>[initials]</u> 10-20-96<br><u>[initials]</u> 10-20-96<br><u>[initials]</u> 10-20-96<br><u>[initials]</u> 10-20-96<br><u>[initials]</u> 10-20-96 |        |
| 6                   | Sample Data, for each Sample: <ul style="list-style-type: none"> <li>• Explosive Results (Form I)</li> <li>• Chromatograms/Quant Reports, Primary column</li> <li>• Chromatograms/Quant Reports, Confirmation column</li> </ul>                                                               | 26       | 110 | <u>[initials]</u> 10-20-96<br><u>[initials]</u> 10-20-96<br><u>[initials]</u> 10-20-96                                                             |        |
| 7                   | Calibration Standard Data                                                                                                                                                                                                                                                                     | 111      | 193 |                                                                                                                                                    |        |
|                     | Primary Column Standards Data <ul style="list-style-type: none"> <li>• Initial Multi-Range Calibration: Chromatograms/Quant Reports</li> <li>• Daily Calibration: Initial: Chromatograms/Quant Reports</li> <li>Continuing: Chromatograms/Quant Reports</li> </ul>                            | 112      |     | <u>[initials]</u> 10-20-96<br><u>[initials]</u> 10-20-96<br><u>[initials]</u> 10-20-96                                                             |        |
|                     | Confirmation Column Standards Data <ul style="list-style-type: none"> <li>• Initial Multi-Range Calibration: Chromatograms/Quant Reports</li> <li>• Daily Calibration:</li> </ul>                                                                                                             | 193      |     | <u>[initials]</u> 10-20-96                                                                                                                         |        |

| CLIENT: CDE - Hot Gas |                                                                                 | Page Nos  |     | Check (initials/date)                                                                  |        |
|-----------------------|---------------------------------------------------------------------------------|-----------|-----|----------------------------------------------------------------------------------------|--------|
| SDG No.: 96C2L963     |                                                                                 | From      | To  | Lab                                                                                    | Client |
|                       | Initial: Chromatograms/Quant Reports<br>Continuing: Chromatograms/Quant Reports |           |     | <i>[Signature]</i> 2/20/96                                                             |        |
| 8                     | Raw QC Data: Blank and Matrix Spike Data                                        | 194       | 212 |                                                                                        |        |
|                       | Method Blank Data                                                               | 195       | 212 | <i>[Signature]</i> 2/20/96<br><i>[Signature]</i> 2/20/96<br><i>[Signature]</i> 2/20/96 |        |
|                       | • Explosive Results (Form I)                                                    |           |     |                                                                                        |        |
|                       | • Chromatograms/Quant Reports, primary column                                   |           |     |                                                                                        |        |
|                       | • Chromatograms/Quant Reports, confirmation column                              |           |     |                                                                                        |        |
|                       | Blank Spike/Blank Spike Duplicate                                               |           |     | <i>[Signature]</i> 2/20/96<br><i>[Signature]</i> 2/20/96                               |        |
|                       | • Explosive Results (Form I)                                                    |           |     |                                                                                        |        |
|                       | • Chromatograms/Quant Reports, primary column                                   |           |     |                                                                                        |        |
|                       | Matrix Spike/Matrix Spike Duplicate                                             | NA        |     | <i>[Signature]</i> 2/20/96<br><i>[Signature]</i> 2/20/96                               |        |
|                       | • Explosive Results (Form I)                                                    |           |     |                                                                                        |        |
|                       | • Chromatograms/Quant Reports, primary column                                   |           |     |                                                                                        |        |
| 9                     | Analysis Logbook Pages                                                          | 213       | 224 | <i>[Signature]</i> 2/20/96                                                             |        |
| 10                    | Standards Preparation Records                                                   | 225       | 232 | <i>[Signature]</i> 2/20/96<br><i>[Signature]</i> 2/20/96                               |        |
|                       | • Surrogate and Target Analyte Spike Solutions                                  |           |     |                                                                                        |        |
|                       | • Analysis Standards                                                            |           |     |                                                                                        |        |
| 11                    | Preparation Logs                                                                | 233       | 239 | <i>[Signature]</i> 2/20/96                                                             |        |
|                       | • Sample Prep (Extraction) Records                                              |           |     |                                                                                        |        |
| 12                    | Other/Miscellaneous                                                             | NA (2/20) |     | <i>[Signature]</i> 2/20/96                                                             |        |
|                       |                                                                                 |           |     |                                                                                        |        |
|                       |                                                                                 |           |     |                                                                                        |        |
|                       |                                                                                 |           |     |                                                                                        |        |

COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Checked by:  
(Laboratory)

*[Signature]*  
Signature

*[Signature]* *[Signature]*  
Printed Name/Title

2-23-96  
Date

Checked by:  
(Client)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name/Title

\_\_\_\_\_  
Date

**WESTON**

**Cover Page (Lab Chron)**

Roy F. Weston, Inc. - Lionville Laboratory  
8330 ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L963

| CLIENT ID            | RFW # | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|-------|-----|----------|------------|-----------|----------|
| AFTOUT-EXPLSV-R2COMP | 004   | AI  | 96LLC015 | 02/02/96   | 02/08/96  | 02/09/96 |
| AFTOUT-EXPLSV-R3COND | 009   | AI  | 96LLC015 | 02/04/96   | 02/08/96  | 02/08/96 |
| AFTOUT-EXPLSV-BTCOND | 014   | AI  | 96LLC015 | 02/04/96   | 02/08/96  | 02/09/96 |
| AFTIN-EXP-R2-COND    | 019   | AI  | 96LLC015 | 02/02/96   | 02/08/96  | 02/08/96 |
| AFTIN-EXP-R2-COND    | 019   | 01  | AI       | 02/02/96   | 02/08/96  | 02/08/96 |
| AFTIN-EXP-R3-COND    | 024   | AI  | 96LLC015 | 02/04/96   | 02/08/96  | 02/08/96 |
| AFTIN-EXP-R3-COND    | 024   | 01  | AI       | 02/04/96   | 02/08/96  | 02/08/96 |
| AFTOUT-EXPLSV-R2-FB  | 026   | AI  | 96LLC017 | 02/02/96   | 02/08/96  | 02/09/96 |
| AFTOUT-EXPLSV-R2-FX  | 027   | AI  | 96LLC016 | 02/02/96   | 02/08/96  | 02/09/96 |
| AFTOUT-EXPLSV-R3-FB  | 028   | AI  | 96LLC017 | 02/04/96   | 02/08/96  | 02/09/96 |
| AFTOUT-EXPLSV-R3-FX  | 029   | AI  | 96LLC016 | 02/04/96   | 02/08/96  | 02/09/96 |
| AFTOUT-EXPLSV-BT-FB  | 030   | AI  | 96LLC017 | 02/04/96   | 02/08/96  | 02/08/96 |
| AFTOUT-EXPLSV-BT-FX  | 031   | AI  | 96LLC016 | 02/04/96   | 02/08/96  | 02/09/96 |
| AFTIN-EXP-R2-FB      | 032   | AI  | 96LLC017 | 02/02/96   | 02/08/96  | 02/08/96 |
| AFTIN-EXP-R2-FX      | 033   | AI  | 96LLC016 | 02/02/96   | 02/08/96  | 02/09/96 |
| AFTIN-EXP-R2-FX      | 033   | 01  | AI       | 02/02/96   | 02/08/96  | 02/09/96 |
| AFTIN-EXP-R3-FB      | 034   | AI  | 96LLC017 | 02/04/96   | 02/08/96  | 02/09/96 |
| AFTIN-EXP-R3-FX      | 035   | AI  | 96LLC016 | 02/04/96   | 02/08/96  | 02/09/96 |
| AFTIN-EXP-R3-FX      | 035   | 01  | AI       | 02/04/96   | 02/08/96  | 02/09/96 |
| AFTIN-EXP-R3-FX      | 035   | 02  | AI       | 02/04/96   | 02/08/96  | 02/09/96 |

LAB QC:

|     |        |    |          |     |          |          |
|-----|--------|----|----------|-----|----------|----------|
| BLK | MB1    | AI | 96LLC015 | N/A | 02/08/96 | 02/08/96 |
| BLK | MB1 BS | AI | 96LLC015 | N/A | 02/08/96 | 02/08/96 |
| BLK | MB1    | AI | 96LLC017 | N/A | 02/08/96 | 02/09/96 |
| BLK | MB1 BS | AI | 96LLC017 | N/A | 02/08/96 | 02/09/96 |
| BLK | MB1    | AI | 96LLC016 | N/A | 02/08/96 | 02/09/96 |
| BLK | MB1 BS | AI | 96LLC016 | N/A | 02/08/96 | 02/09/96 |



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### EXPLOSIVES

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**WESTEN**

**Case Narrative**



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Lionville, Pennsylvania 19341-1333  
© 610-701-6100 • Fax 610-701-6140

## LIONVILLE LABORATORY ANALYTICAL REPORT

Client : COE-HOT GAS  
RFW# : 9602L963

W.O :02281-012-012-1200-00  
Date Received: 07 February 1996

### EXPLOSIVE

1. The set of samples consisted of five (5) air samples which were collected on 02,04 February 1996. Each sampling train consisted of three fractions: condensate, solid (filter / XAD), and solvent; each fraction has been analyzed and reported individually.
2. The samples and their associated QC samples were prepared on 08 February 1996 and analyzed by methodology based on EPA method 8330 on 08,09 February 1996.
3. The sample ID's for this set of samples were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters on Organic CLP forms.
4. All required holding times for extraction and analysis were met.
5. All initial calibrations associated with this data set were within acceptance criteria.
6. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
7. Laboratory control limits were not available for assessing surrogate and spike recoveries for the procedures used to prepare these samples.
8. Laboratory control limits were not available for air matrices. However, samples AFTOUT-EXPLSV-R3COND and AFTOUT-EXPLSV-BTCOND exhibited surrogate recoveries outside the laboratory control limits for water samples, which are applicable in this case. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
9. Tetryl was not recovered from the blank spike (96LLC017-MB1 BS) associated with the solvent matrix.
10. The Tetryl recovery from blank spike (96LLC016-MB1 BS) associated with solid matrix was relatively low.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 241 pages.

005





11. All samples associated with 'AFTIN' (afterburner inlet) required dilution due to the presence of high levels of target analytes.
12. The following solvent samples required two-fold dilutions due to immiscibility with acetonitrile:
  1. AFTOUT-EXPLSV-R2-FB
  2. AFTOUT-EXPLSV-R3-FB
  3. 96LLC017-MB1
  4. 96LLC017-MB1 BS

*Bruce C. Taylor, Vice President*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2-23-96

Date



**DATA QUALIFIERS**

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

**ABBREVIATIONS**

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates spiked compound.

## WESTON: Sample Discrepancy Report (SDR)

SDR #: 96AM 0098Initiator: K. BakerRFW Batch: 9602L916, 943Parameter: ALLDate: 2-14-96Samples: ALLMatrix: AIRClient: AAAP Hot GasMethod: SW846/MCAWW/CLP

Prep Batch: \_\_\_\_\_

## 1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C.  
☐ Transcription Error ☐ Wrong Test Code ☒ Other wrong matrix

## b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)....signature/date: \_\_\_\_\_

## c. QC Problem (Include all relevant specific results; attach data if necessary)

*ALL matrices should be air.  
 please change all samples listed as water to air.*

## 2. Known or Probable Causes(s)

## 3. Discussion and Proposed Action

Other Description:

- ☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

*X change matrix where appropriate  
 to air.*

4. Project Manager Instructions...signature/date: K. Baker 2/14/96

- ☒ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☐ Client Contacted:  
 Date/Person \_\_\_\_\_  
☐ Add  
☐ Cancel

5. Final Action...signature/date: Dynore 2/5/96

Other Explanation:

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☐ Included in Case Narrative  
☒ Hard Copy COC Revised  
☒ Electronic COC Revised  
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR  
☐ ☒ Initiator  
☐ ☒ Lab Manager: J. Michael Taylor  
☐ ☒ Project Mgr.  
☐ ☒ Section Mgr: Siery/Durke/Daniels  
☐ ☒ QA Section Mgr: Dianne Therry  
☐ ☒ QA File: Feldman/Racioppi/Shaffer  
☐ ☒ Data Reporting: Som Basuthakur  
☐ ☐ Sample Prep: Osei-Mensah/Swisher

Route Distribution of Completed SDR  
☐ ☐ Metals: Reichner/Doughty  
☐ ☐ Inorganic: Perrone/Leonards  
☐ ☐ GC/LC: Jarvis/Skrzat/Schnell  
☐ ☐ MS: LeMin/Mcintyre/Taylor/Kasdras/Steele  
☐ ☐ Log-in: Geiger  
☐ ☐ EDD: Miller  
☐ ☐ Admin: Brewer/Keehn/Edgington  
☐ ☐ Other: \_\_\_\_\_

# WESTON® Sample Discrepancy Report (SDR)

SDR #: 96LC036  
 Parameter: Air (H<sub>2</sub>O) 8330  
 Matrix: Air (H<sub>2</sub>O)  
 Prep Batch: \_\_\_\_\_

Initiator: C. Schnell RFW Batch: 9602L963  
 Date: 2/12/96 Samples: 009, 014  
 Client: CE - Hot Gas Method: SW846/MCAWW/CLP/

## 1. Reason for SDR

- a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C  
☐ Transcription Error ☐ Wrong Test Code ☐ Other \_\_\_\_\_
- b. General Discrepancy  
☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: \_\_\_\_\_

## c. QC Problem (Include all relevant specific results; attach data if necessary)

Low surrogate recoveries. For Sample 963-009 → 36%; Sample 963-014 → 0%

## 2. Known or Probable Causes(s)

963-009 - unknown  
 963-014 - large volume of ACN present after 1st RSDE step, which may be an indication something may have been present in the sample which interfered with ACN/salt water equilibrium.

## 3. Discussion and Proposed Action

- ☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

## Other Description:

963-009: despite low recovery; reporting limits are much below action levels for the project.  
 963-014: condensate from blank sampling train. other fractions of 'BT' clean.

## 4. Project Manager Instructions...signature/date:

- ☐ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☒ Include in Case Narrative  
☐ Client Contacted:  
 Date/Person \_\_\_\_\_  
☐ Add  
☐ Cancel

## 5. Final Action...signature/date:

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☒ Included in Case Narrative  
☐ Hard Copy COC Revised  
☐ Electronic COC Revised  
☐ EDD Corrections Completed

## Other Explanation:

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR  
☒ Initiator  
☒ Lab Manager: J. Michael Taylor  
☒ Project Mgr: K. Baker / I. Daniels  
☒ Section Mgr: Siery/Durke/Daniels  
☒ QA Section Mgr: Dianne Therry  
☒ QA File: Feldman/Racioppi/Shaffer  
☒ Data Reporting: Som Basuthakur  
☐ Sample Prep: Osei-Mensah/Swisher

Route Distribution of Completed SDR  
☐ Metals: Reichner/Doughty  
☐ Inorganic: Perrone/Leonards  
☐ GC/LC: Jarvis/Skrzat/Schnell  
☐ MS: LeMin/McIntyre/Taylor/Kasdras/Steele  
☐ Log-in: Geiger  
☐ EDD: Miller  
☐ Admin: Brewer/Keehn/Edgington  
☐ Other: \_\_\_\_\_

**WESTON**

**Shipping, Receiving, and Custody Record**

# Custody Transfer Record/Lab Work Request

Client COE-HOT 6 AS  
Est. Final Proj. Sampling Date  
Work Order # 02281-012-92-1200  
Project Contact/Phone # J. Onleill X7201  
AD Project Manager K. BARNER  
QC 500  
Date Rec'd 2/7/96 Date Due 2/14/96  
Account # COE-HOT 6 AS

Refrigerator #  
#/Type Container  
Volume  
Preservatives  
ANALYSES REQUESTED

ORGANIC  
OA SA MS DO Te  
Metal INORG

| MATRIX CODES: | Lab ID | Client ID/Description        | Matrix QC Chosen (✓) | Matrix | Date Collected | Time Collected |
|---------------|--------|------------------------------|----------------------|--------|----------------|----------------|
| S - Soil      | 21     | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| SE - Sediment | 2      | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| SO - Solid    | 3      | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| SL - Sludge   | 4      | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| W - Water     | 5      | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| O - Oil       | 6      | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| A - Air       | 7      | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| DS - Drum     | 8      | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| Solids        | 9      | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| DL - Drum     | 10     | COE-H6-APPT-EXPV-12-TH-12/96 | MS MSD               |        |                |                |
| Liquids       |        |                              |                      |        |                |                |
| EPTCLP        |        |                              |                      |        |                |                |
| Leachate      |        |                              |                      |        |                |                |
| WI - Waste    |        |                              |                      |        |                |                |
| X - Other     |        |                              |                      |        |                |                |
| F - Flah      |        |                              |                      |        |                |                |

| WESTON Analytics Use Only | Matrix | Date Collected | Time Collected | Matrix QC Chosen (✓) | Matrix | Date Collected | Time Collected |
|---------------------------|--------|----------------|----------------|----------------------|--------|----------------|----------------|
| Similar                   |        |                |                |                      |        |                |                |
| EMA 8330*                 |        |                |                |                      |        |                |                |
| EMA 8270*                 |        |                |                |                      |        |                |                |
| Run 2                     |        |                |                |                      |        |                |                |
| Run 3                     |        |                |                |                      |        |                |                |

DATE/REVISIONS:  
1. Analyze w/ 3  
2. test for lower  
3. Custom number sent w/ lab  
4. 500 EPA 5015  
5. Select highest exposure  
6. Calculate and analyze

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:  
\* RDX, HMX, tet nyl;  
2,4-DNT, 2,6-DNT;  
NB; 1,3-DNB; 1,3,5-TNB;  
2,4,6-TNT

WESTON Analytics Use Only

| Relinquished by   | Received by    | Date          | Time         |
|-------------------|----------------|---------------|--------------|
| <u>S. D. Carl</u> | <u>Richard</u> | <u>2/7/96</u> | <u>15:40</u> |

| Relinquished by | Received by | Date | Time |
|-----------------|-------------|------|------|
|                 |             |      |      |

Discrepancies Between Samples Labels and COC Record? Y or N  
NOTES:  
COC Tape was:  
1) Shipped ☒ or Hand Delivered ☐  
2) Unbroken on Outer Package Y or N  
3) Present on Sample Condition Y or N  
4) Labels Indicate Properly Preserved Sample Y or N  
5) Received Within Holding Times Y or N  
COC Record Present Upon Sample Rec't Y or N

See pg 2 for revisions

WESTON Analytics Use Only  
 960329103

# Custody Transfer Record/Lab Work Request

Explosives - AF7 with

Client: COE - HQT 6AS  
 Est. Final Proj. Sampling Date: 02281-012-012-1200  
 Work Order #: 02281-012-012-1200  
 Project Contact/Phone #: 3.342.11 x7201  
 AD Project Manager: K. Baker  
 QC: 500 Del: 100 TAT  
 Date Rec'd: \_\_\_\_\_ Date Due: \_\_\_\_\_  
 Account #: \_\_\_\_\_

| MATRIX CODES: | Lab ID                 | Client ID/Description | Matrix QC Chosen (✓) | Matrix Chosen (✓) | Date Collected | Time Collected | WESTON Analytics Use Only |     |     |     |     |     |       |       |    |  |
|---------------|------------------------|-----------------------|----------------------|-------------------|----------------|----------------|---------------------------|-----|-----|-----|-----|-----|-------|-------|----|--|
|               |                        |                       |                      |                   |                |                | MS                        | MSD | VOA | BNA | PCB | Heb | INORG | Metal | CN |  |
| S - Soil      | 011 COE-HG-AFT07-EXP-1 | BT-FHS 12/4/96        | BT-FHS 12/4/96       | BT-FHS 12/4/96    |                |                |                           |     |     |     |     |     |       |       |    |  |
| SE - Sediment | 012 COE-HG-AFT07-EXP-2 | BT-FHS 12/4/96        | BT-FHS 12/4/96       | BT-FHS 12/4/96    |                |                |                           |     |     |     |     |     |       |       |    |  |
| SO - Solid    | 013 COE-HG-AFT07-EXP-3 | BT-FHS 12/4/96        | BT-FHS 12/4/96       | BT-FHS 12/4/96    |                |                |                           |     |     |     |     |     |       |       |    |  |
| SL - Sludge   | 014 COE-HG-AFT07-EXP-4 | BT-FHS 12/4/96        | BT-FHS 12/4/96       | BT-FHS 12/4/96    |                |                |                           |     |     |     |     |     |       |       |    |  |
| W - Water     | 015 COE-HG-AFT07-EXP-5 | BT-FHS 12/4/96        | BT-FHS 12/4/96       | BT-FHS 12/4/96    |                |                |                           |     |     |     |     |     |       |       |    |  |
| O - Oil       |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| A - Air       |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| DS - Drum     |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| Solids        |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| DL - Drum     |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| Liquids       |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| L - EP/TCLP   |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| Leachate      |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| WI - Wipe     |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| X - Other     |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |
| F - Fish      |                        |                       |                      |                   |                |                |                           |     |     |     |     |     |       |       |    |  |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: \* RDX; HMX; tetra; 2,4-DNT; 2,6-DNT; NB; 1,3-DNB; 1,3,5-TNB; 2,4,6-TNT

DATE/REVISIONS: 1. Analyze BT for 2. 3015 semi vials 3. 2015 to be logged as 4. per 2015 5. cancelled 06/25/04 6. per SQA at 9/6/05

| Relinquished by | Received by | Date   | Time  | Relinquished by | Received by | Date | Time |
|-----------------|-------------|--------|-------|-----------------|-------------|------|------|
| S. Baker        | S. Baker    | 2/7/96 | 15:40 |                 |             |      |      |

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

WESTON Analytics Use Only

Samples were: 1) Shipped or Hand Delivered 2) Ambient or Chilled Airfill 3) Received in Condition Y or N 4) Labels indicate Properly Preserved Y or N 5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N 2) Unbroken on Outer Package Y or N 3) Present on Sample Condition Y or N 4) Unbroken on Sample Y or N 5) COC Record Present Upon Sample Rec'l Y or N

76021963

Explosives - AFT INLET  
Custody Transfer Record/Lab Work Request

Client COE-HOT 6AC

Est. Final Proj. Sampling Date

Work Order # 02281-012-1200

Project Contact/Phone # J. Orrell x7201

AD Project Manager K. Baker

QC SPD Del STD TAT

Date Rec'd \_\_\_\_\_ Date Due \_\_\_\_\_

Account # \_\_\_\_\_

| MATRIX CODES:                      | Lab ID | Client ID/Description | Matrix QC Chosen (✓) | Matrix |     | Date Collected | Time Collected | WESTON Analytics Use Only |     |    |     |         |       |  |  |  |  |
|------------------------------------|--------|-----------------------|----------------------|--------|-----|----------------|----------------|---------------------------|-----|----|-----|---------|-------|--|--|--|--|
|                                    |        |                       |                      | MS     | MSD |                |                | VOA                       | BNA | CB | Heb | ORGANIC | INORG |  |  |  |  |
| S - Soil                           |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| SE - Sediment                      |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| SO - Solid                         |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| SL - Sludge                        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| W - Water                          |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| O - Oil                            |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| A - Air                            |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| DS - Drum                          |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| DL - Drum                          |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| L - Liquids                        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| EP - EPTCL                         |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| Leachate                           |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| WI - Waste                         |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| X - Other                          |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| F - Fish                           |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 06 COE-H6-ARTIN-EXP-R3-FAST 2/2/96 |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 17 COE-H6-ARTIN-EXP-R3-FAST        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 18 COE-H6-ARTIN-EXP-R3-FAST        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 19 COE-H6-ARTIN-EXP-R3-FAST        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 20 COE-H6-ARTIN-EXP-R3-FAST        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 21 COE-H6-ARTIN-EXP-R3-FAST        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 22 COE-H6-ARTIN-EXP-R3-FAST        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 23 COE-H6-ARTIN-EXP-R3-FAST        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 24 COE-H6-ARTIN-EXP-R3-FAST        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |
| 25 COE-H6-ARTIN-EXP-R3-FAST        |        |                       |                      |        |     |                |                |                           |     |    |     |         |       |  |  |  |  |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

DATE/REVISIONS:

1. Analyze 1 of 3

\* RDX; HMX; tetra;

2,4,-DNT; 2,6-DNT;

NB; 1,3-DNB; 1,3,5-TNB

2,4,6-TNT

2. test two for

3. lower carbon number

4. semi volatiles only

5. EPA 8015 - extract run

6. based on his test 8330460

WESTON Analytics Use Only

Samples were:

1) Shipped \_\_\_\_\_ or

Hand Delivered \_\_\_\_\_

Airbill # \_\_\_\_\_

2) Ambient or Chilled

3) Refrigerated Good

4) Labels Indicate

Properly Preserved

Sample Y or N

COC Record Present

Upon Sample Rec'd

Y or N

COC Tape was:

1) Present on Outer

Package Y or N

2) Unbroken on Outer

Package Y or N

3) Present on Sample

Condition Y or N

4) Unbroken on

Sample Y or N

COC Record Present

Upon Sample Rec'd

Y or N

Discrepancies Between

Samples Labels and

COC Record? Y or N

NOTES:

Time

Date

Received

by

Relinquished

by

Time

Date

Received

by

Time

Date

# Custody Transfer Record/Lab Work Request

WESTON Analytics Use Only  
910029163

|                                |  |                       |        |          |               |                      |                    |            |       |                |  |
|--------------------------------|--|-----------------------|--------|----------|---------------|----------------------|--------------------|------------|-------|----------------|--|
| Client: COE-H016A3             |  | Refrigerator #        | Liquid |          | Solid         |                      | Liquid             |            | Solid |                |  |
| Est. Final Proj. Sampling Date |  | #/Type Container      | Volume |          | Preservatives |                      | ANALYSES REQUESTED |            | ↑     |                |  |
| Work Order #                   |  | TAT                   |        | Date Due |               | Account #            |                    | INORG      |       | Metal          |  |
| Project Contact/Phone #        |  | AD Project Manager    |        | QC       |               | Date Rec'd           |                    | Date Rec'd |       | Account #      |  |
| Matrix Codes:                  |  | Client ID/Description |        | Lab ID   |               | Matrix QC Chosen (✓) |                    | Matrix     |       | Time Collected |  |
| 8 - Soil                       |  | 26 APTOUT-EXPSV-R2-FB |        | 26       |               | MS MSD               |                    | Hr         |       | 2/2/96         |  |
| 8E - Sediment                  |  | 27 APTOUT-EXPSV-R2-FX |        | 27       |               |                      |                    | I          |       | 2/2/96         |  |
| 8O - Solid                     |  | 28 APTOUT-EXPSV-R3-FB |        | 28       |               |                      |                    | I          |       | 2/2/96         |  |
| 8L - Sludge                    |  | 29 APTOUT-EXPSV-R3-FX |        | 29       |               |                      |                    | I          |       | 2/2/96         |  |
| W - Water                      |  | 30 APTOUT-EXPSV-R3-FB |        | 30       |               |                      |                    | I          |       | 2/2/96         |  |
| O - Oil                        |  | 31 APTOUT-EXPSV-R3-FX |        | 31       |               |                      |                    | I          |       | 2/2/96         |  |
| A - Air                        |  | 32 APTIN-EXP-RQ-FB    |        | 32       |               |                      |                    | I          |       | 2/2/96         |  |
| DS - Drum                      |  | 33 APTIN-EXP-RQ-FX    |        | 33       |               |                      |                    | I          |       | 2/2/96         |  |
| DL - Drum                      |  | 34 APTIN-EXP-RQ-FB    |        | 34       |               |                      |                    | I          |       | 2/2/96         |  |
| L - EP/CLP                     |  | 35 APTIN-EXP-RQ-FX    |        | 35       |               |                      |                    | I          |       | 2/2/96         |  |
| WI - Wipe                      |  |                       |        |          |               |                      |                    |            |       |                |  |
| X - Other                      |  |                       |        |          |               |                      |                    |            |       |                |  |
| F - Fish                       |  |                       |        |          |               |                      |                    |            |       |                |  |

|                                             |  |                                          |  |
|---------------------------------------------|--|------------------------------------------|--|
| FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS |  | DATE/REVISIONS:                          |  |
| Special Instructions:                       |  | 1. 035H016A3-2019.024.032.033.034+035    |  |
| FB = FHS+BHS Composite                      |  | 2. 02-96-110090                          |  |
| FX = FIJT + XAD Comp                        |  | 3. 1/4/96 - All Matrix = Air purged 100% |  |
| Relinquished by                             |  | Relinquished by                          |  |
| Received by                                 |  | Received by                              |  |
| Date                                        |  | Date                                     |  |
| Time                                        |  | Time                                     |  |
| Relinquished by                             |  | Relinquished by                          |  |
| Received by                                 |  | Received by                              |  |
| Date                                        |  | Date                                     |  |
| Time                                        |  | Time                                     |  |





### **Explosive Sample QC/Data Summary**

Roy F. Weston, Inc. - Lionville Laboratory  
Explosives by HPLC / Method 8330

Report Date: 02/15/96 20:23

RFW Batch Number: 9602L963

Client: COE-HOT GAS

Work Order: 02281-012-1200-00

Page: 190

Cust ID: AFTOUT-EXPLS AFTOUT-EXPLS AFTOUT-EXPLS AFTIN-EXP-R2 AFTIN-EXP-R2 AFTIN-EXP-R3  
V-R2COMP V-R3COND V-BTCOND -COND -COND -COND  
RFW#: 004 009 014 019 024  
Matrix: AIR AIR AIR AIR AIR  
D.F.: 1.00 1.00 1.00 1.00 1.00  
Units: total ug total ug total ug total ug total ug

| Surrogate:            | 1,2-Dinitrobenzene | 75     | 36     | 0      | 0      | 72     | 68     | 68     | 68     |
|-----------------------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| =====                 | =====              | =====  | =====  | =====  | =====  | =====  | =====  | =====  | =====  |
| HMN                   | 2.2 U              | 2.2 U  | 2.2 U  | 2.2 U  | 2.2 U  | 2.2 U  | 2.2 U  | 2.2 U  | 2.2 U  |
| RDX                   | 1.0 U              | 1.0 U  | 1.0 U  | 1.0 U  | 1.0 U  | 1.0 U  | 1.0 U  | 1.0 U  | 1.0 U  |
| 1,3,5-Trinitrobenzene | 0.50 U             | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U |
| 1,3-Dinitrobenzene    | 0.52 U             | 0.52 U | 0.52 U | 0.52 U | 0.52 U | 0.52 U | 0.52 U | 0.52 U | 0.52 U |
| Nitrobenzene          | 0.52 U             | 0.52 U | 0.52 U | 0.52 U | 0.52 U | 0.52 U | 0.52 U | 0.52 U | 0.52 U |
| Tetryl                | 1.5 U              | 1.5 U  | 1.5 U  | 1.5 U  | 1.5 U  | 1.5 U  | 1.5 U  | 1.5 U  | 1.5 U  |
| 2,4,6-Trinitrotoluene | 0.50 U             | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U |
| 2,6-Dinitrotoluene    | 0.50 U             | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U |
| 2,4-Dinitrotoluene    | 0.50 U             | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U | 0.50 U |

Cust ID: AFTIN-EXP-R3 AFTOUT-EXPLS AFTOUT-EXPLS AFTOUT-EXPLS AFTOUT-EXPLS AFTOUT-EXPLS  
-COND 024 DL 026 027 028 029 030  
Matrix: AIR AIR AIR AIR AIR AIR  
D.F.: 5000 2.00 2.00 1.00 2.00 1.00  
Units: total ug total ug total ug total ug total ug

| Surrogate:            | 1,2-Dinitrobenzene | D     | 56    | 70    | 72    | 68    | 68    | 68    | 68    |
|-----------------------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| =====                 | =====              | ===== | ===== | ===== | ===== | ===== | ===== | ===== | ===== |
| HMN                   | 11000 U            | 4.4 U | 4.4 U | 2.2 U | 4.4 U | 2.2 U | 2.2 U | 2.2 U | 2.2 U |
| RDX                   | 5000 U             | 2.0 U | 2.0 U | 1.0 U | 2.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,3,5-Trinitrobenzene | 2500 U             | 1.0 U | 1.0 U | 5.0 U | 1.0 U | 5.0 U | 5.0 U | 5.0 U | 5.0 U |
| 1,3-Dinitrobenzene    | 2600 U             | 1.0 U | 1.0 U | 5.2 U | 1.0 U | 5.2 U | 5.2 U | 5.2 U | 5.2 U |
| Nitrobenzene          | 2600 U             | 1.0 U | 1.0 U | 5.2 U | 1.0 U | 5.2 U | 5.2 U | 5.2 U | 5.2 U |
| Tetryl                | 7300 U             | 2.9 U | 2.9 U | 15 U  | 2.9 U | 15 U  | 15 U  | 15 U  | 15 U  |
| 2,4,6-Trinitrotoluene | 6300 U             | 1.0 U | 1.0 U | 5.0 U | 1.0 U | 5.0 U | 5.0 U | 5.0 U | 5.0 U |
| 2,6-Dinitrotoluene    | 2500 U             | 1.0 U | 1.0 U | 5.0 U | 1.0 U | 5.0 U | 5.0 U | 5.0 U | 5.0 U |
| 2,4-Dinitrotoluene    | 2500 U             | 1.0 U | 1.0 U | 5.0 U | 1.0 U | 5.0 U | 5.0 U | 5.0 U | 5.0 U |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
% = Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

Cust ID: AFTOUT-EXPLS AFTIN-EXP-R2 AFTIN-EXP-R2 AFTIN-EXP-R2 AFTIN-EXP-R3 AFTIN-EXP-R3  
 V-BT-FX -FB -FX -FB -FX -FX  
 RFW#: 031 032 033 034 035  
 Matrix: AIR AIR AIR AIR AIR  
 D.F.: 1.00 100 1.00 100 1.00  
 Units: total ug total ug total ug total ug total ug

| Surrogate:            | 1,2-Dinitrobenzene | 75    | D      | 126    | D     | D      | I     |
|-----------------------|--------------------|-------|--------|--------|-------|--------|-------|
| HMZ                   | 22 U               | 220 U | 22 U   | 2200 U | 220 U | 22 U   | 22 U  |
| RDX                   | 10 U               | 760   | 120    | 1000 U | 230   | 470 E  | 250 E |
| 1,3,5-Trinitrobenzene | 5.0 U              | 39    | 60     | 500 U  | 23    | 23     | 23    |
| 1,3-Dinitrobenzene    | 5.2 U              | 52 U  | 9.4    | 520 U  | 52 U  | 5.2 U  | 70    |
| Nitrobenzene          | 5.2 U              | 52 U  | 5.2 U  | 520 U  | 52 U  | 2500 E | 5.0 U |
| Tetryl                | 15 U               | 150 U | 15     | 1500 U | 150 U | 50 U   | 5.0 U |
| 2,4,6-Trinitrotoluene | 5.0 U              | 920   | 2300 E | 2500   | 960   | 50 U   | 5.0 U |
| 2,6-Dinitrotoluene    | 5.0 U              | 50 U  | 21     | 500 U  | 50 U  | 50 U   | 5.0 U |
| 2,4-Dinitrotoluene    | 5.0 U              | 50 U  | 5.0 U  | 500 U  | 50 U  | 50 U   | 5.0 U |

Cust ID: AFTIN-EXP-R3 AFTIN-EXP-R3 BLK BLK BLK BLK BLK BLK  
 -FX -FX -FX -FX -FX -FX  
 RFW#: 035 DL 035 DL 96LLC015-MB1 96LLC015-MB1 96LLC017-MB1 96LLC017-MB1  
 Matrix: AIR AIR AIR AIR AIR AIR  
 D.F.: 10.0 100 1.00 1.00 2.00 2.00  
 Units: total ug total ug total ug total ug total ug total ug

| Surrogate:            | 1,2-Dinitrobenzene | D      | 71     | 73 | 45    | 26 |
|-----------------------|--------------------|--------|--------|----|-------|----|
| HMZ                   | 220 U              | 2200 U | 2.2 U  | 68 | 4.4 U | 18 |
| RDX                   | 610                | 1000 U | 1.0 U  | 62 | 2.0 U | 29 |
| 1,3,5-Trinitrobenzene | 290                | 500 U  | 0.50 U | 79 | 1.0 U | 21 |
| 1,3-Dinitrobenzene    | 52 U               | 520 U  | 0.52 U | 73 | 1.0 U | 27 |
| Nitrobenzene          | 52 U               | 520 U  | 0.52 U | 77 | 1.0 U | 36 |
| Tetryl                | 150 U              | 1500 U | 1.5 U  | 94 | 2.9 U | 13 |
| 2,4,6-Trinitrotoluene | 2800 E             | 2700 U | 0.50 U | 85 | 1.0 U | 23 |
| 2,6-Dinitrotoluene    | 50 U               | 500 U  | 0.50 U | 80 | 1.0 U | 21 |
| 2,4-Dinitrotoluene    | 50 U               | 500 U  | 0.50 U | 79 | 1.0 U | 21 |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
 % = Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \* = Outside of Advisory limits.

Roy F. Weston, Inc. - Lionville Laboratory  
Explosives by HPLC / Method 8330

Report Date: 02/15/96 20:23

RFW Batch Number: 9602L963 Client: COE-HOT GAS Work Order: 02281-012-012-1200-00 Page: 3

Cust ID: BLK BLK BS

Sample Information RFW#: 96LLC016-MB1 96LLC016-MB1  
Matrix: AIR AIR  
D.F.: 1.00 1.00  
Units: total ug total ug

| Surrogate:            | 1,2-Dinitrobenzene | 80    | %     | 78    | %     |
|-----------------------|--------------------|-------|-------|-------|-------|
| =====                 | =====              | ===== | ===== | ===== | ===== |
| HMX                   |                    | 22    | U     | 75    | %     |
| RDX                   |                    | 10    | U     | 70    | %     |
| 1,3,5-Trinitrobenzene |                    | 5.0   | U     | 58    | %     |
| 1,3-Dinitrobenzene    |                    | 5.2   | U     | 82    | %     |
| Nitrobenzene          |                    | 5.2   | U     | 85    | %     |
| Tetryl                |                    | 15    | U     | 19    | %     |
| 2,4,6-Trinitrotoluene |                    | 5.0   | U     | 78    | %     |
| 2,6-Dinitrotoluene    |                    | 5.0   | U     | 87    | %     |
| 2,4-Dinitrotoluene    |                    | 5.0   | U     | 87    | %     |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

8MD 2/15/96

2F

SOIL ORGANICS SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot No.: 9602L963

GC Column(1): OD5/DA ID: OD5/(mm)

GC Column(2): ID:       (mm)

| CLIENT                  | 1      | 2      | 1      | 2      | 1      | 2      | TOT |
|-------------------------|--------|--------|--------|--------|--------|--------|-----|
| SAMPLE NO.              | %REC # | %REC # | %REC # | %REC # | %REC # | %REC # | OUT |
| 01 AFTOUT-EXPLSV-R2COMP | 75     |        |        |        |        |        | 0   |
| 02 AFTOUT-EXPLSV-R3COND | 36     |        |        |        |        |        | 0   |
| 03 AFTOUT-EXPLSV-BTCOND | 0 *    |        |        |        |        |        | 1   |
| 04 AFTIN-EXP-R2-COND    | D      |        |        |        |        |        | 0   |
| 05 AFTIN-EXP-R2-COND    | D      |        |        |        |        |        | 0   |
| 06 AFTIN-EXP-R3-COND    | D      |        |        |        |        |        | 0   |
| 07 AFTIN-EXP-R3-COND    | D      |        |        |        |        |        | 0   |
| 08 AFTOUT-EXPLSV-R2-FB  | 56     |        |        |        |        |        | 0   |
| 09 AFTOUT-EXPLSV-R2-FX  | 70     |        |        |        |        |        | 0   |
| 10 AFTOUT-EXPLSV-R3-FB  | 72     |        |        |        |        |        | 0   |
| 11 AFTOUT-EXPLSV-R3-FX  | 68     |        |        |        |        |        | 0   |
| 12 AFTOUT-EXPLSV-BT-FB  | 68     |        |        |        |        |        | 0   |
| 13 AFTOUT-EXPLSV-BT-FX  | 75     |        |        |        |        |        | 0   |
| 14 AFTIN-EXP-R2-FB      | D      |        |        |        |        |        | 0   |
| 15 AFTIN-EXP-R2-FX      | 126    |        |        |        |        |        | 0   |
| 16 AFTIN-EXP-R2-FX      | D      |        |        |        |        |        | 0   |
| 17 AFTIN-EXP-R3-FB      | D      |        |        |        |        |        | 0   |
| 18 AFTIN-EXP-R3-FX      | I      |        |        |        |        |        | 0   |
| 19 AFTIN-EXP-R3-FX      | D      |        |        |        |        |        | 0   |
| 20 AFTIN-EXP-R3-FX      | D      |        |        |        |        |        | 0   |
| 21 BLK                  | 71     |        |        |        |        |        | 0   |
| 22 BLKBS                | 73     |        |        |        |        |        | 0   |
| 23 BLK                  | 45     |        |        |        |        |        | 0   |
| 24 BLKBS                | 26     |        |        |        |        |        | 0   |
| 25 BLK                  | 80     |        |        |        |        |        | 0   |
| 26 BLKBS                | 78     |        |        |        |        |        | 0   |

= 1,2-Dinitrobenzene

ADVISORY  
QC LIMITS  
( 1-999)

# Column to be used to flag recovery values  
\* Values outside of QC limits  
D Surrogate diluted out

Control Limits Are Not ~~AV~~ AVAILABLE

8MD 2/15/96

3F  
AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC015-MB1

BLANK Spike - Sample No.: BLK

*MD 2/15/96*

| COMPOUND              | SPIKE<br>ADDED<br>(tot. µg) | SAMPLE<br>CONCENTRATION<br>(tot. µg) | BS<br>CONCENTRATION<br>(tot. µg) | BS<br>%<br>REC # | QC<br>LIMITS<br>REC. |
|-----------------------|-----------------------------|--------------------------------------|----------------------------------|------------------|----------------------|
| =====                 | =====                       | =====                                | =====                            | =====            | =====                |
| HMX                   | 22.0                        | 0                                    | 15                               | 68               | 1-999                |
| RDX                   | 10.0                        | 0                                    | 6.2                              | 62               | 1-999                |
| 1,3,5-Trinitrobenzene | 2.50                        | 0                                    | 2.0                              | 79               | 1-999                |
| 1,3-Dinitrobenzene    | 2.50                        | 0                                    | 1.8                              | 73               | 1-999                |
| Nitrobenzene          | 2.60                        | 0                                    | 2.0                              | 77               | 1-999                |
| Tetryl                | 6.50                        | 0                                    | 6.1                              | 94               | 1-999                |
| 2,4,6-Trinitrotoluene | 2.50                        | 0                                    | 2.1                              | 85               | 1-999                |
| 2,6-Dinitrotoluene    | 2.60                        | 0                                    | 2.1                              | 80               | 1-999                |
| 2,4-Dinitrotoluene    | 2.50                        | 0                                    | 2.0                              | 79               | 1-999                |

# Column to be used to flag recovery value with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 9 outside limits

COMMENTS: Control Limits are not available

3F  
AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC017-MB1

BLANK Spike - Sample No.: BLK

*2ND 2/15/96*

| COMPOUND              | SPIKE     | SAMPLE        | BS            | BS    | QC     |
|-----------------------|-----------|---------------|---------------|-------|--------|
|                       | ADDED     | CONCENTRATION | CONCENTRATION | %     | LIMITS |
|                       | (tot. pg) | (tot. pg)     | (tot. pg)     | REC # | REC.   |
| =====                 | =====     | =====         | =====         | ===== | =====  |
| HMX                   | 22.0      | 0             | 4.0           | 18    | 1-999  |
| RDX                   | 10.0      | 0             | 2.9           | 29    | 1-999  |
| 1,3,5-Trinitrobenzene | 2.50      | 0             | 0.52          | 21    | 1-999  |
| 1,3-Dinitrobenzene    | 2.50      | 0             | 0.68          | 27    | 1-999  |
| Nitrobenzene          | 2.60      | 0             | 0.94          | 36    | 1-999  |
| Tetryl                | 6.50      | 0             | 0             | 0 *   | 1-999  |
| 2,4,6-Trinitrotoluene | 2.50      | 0             | 0.32          | 13    | 1-999  |
| 2,6-Dinitrotoluene    | 2.60      | 0             | 0.60          | 23    | 1-999  |
| 2,4-Dinitrotoluene    | 2.50      | 0             | 0.52          | 21    | 1-999  |

# Column to be used to flag recovery value with an asterisk

\* Values outside of QC limits

Spike Recovery: 1 out of 9 outside limits

COMMENTS: Control Limits are not available

3F  
AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC016-MB1

BLANK Spike - Sample No.: BLK

*RWD 2/15/96*

| COMPOUND              | SPIKE<br>ADDED<br>(tot. pg) | SAMPLE<br>CONCENTRATION<br>(tot. pg) | BS<br>CONCENTRATION<br>(tot. pg) | BS<br>%<br>REC # | QC<br>LIMITS<br>REC. |
|-----------------------|-----------------------------|--------------------------------------|----------------------------------|------------------|----------------------|
| =====                 | =====                       | =====                                | =====                            | =====            | =====                |
| HMX                   | 220                         | 0                                    | 170                              | 75               | 1-999                |
| RDX                   | 100                         | 0                                    | 70                               | 70               | 1-999                |
| 1,3,5-Trinitrobenzene | 25.0                        | 0                                    | 15                               | 58               | 1-999                |
| 1,3-Dinitrobenzene    | 25.0                        | 0                                    | 20                               | 82               | 1-999                |
| Nitrobenzene          | 26.0                        | 0                                    | 22                               | 85               | 1-999                |
| Tetryl                | 65.0                        | 0                                    | 12                               | 19               | 1-999                |
| 2,4,6-Trinitrotoluene | 25.0                        | 0                                    | 19                               | 78               | 1-999                |
| 2,6-Dinitrotoluene    | 26.0                        | 0                                    | 23                               | 87               | 1-999                |
| 2,4-Dinitrotoluene    | 25.0                        | 0                                    | 22                               | 87               | 1-999                |

# Column to be used to flag recovery value with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 9 outside limits

COMMENTS: Control Limits are not available



## 4C

BLK

Contract: 2281-12-12

Lab File ID: 02089646.19

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 02/08/96

Date Analyzed (2) : \_\_\_\_\_

Time Analyzed (2): \_\_\_\_\_

Instrument ID (2) :

GC Column (2): ID: \_\_\_\_\_ (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

COMMENTS: \_\_\_\_\_

**4C**

| BLK

Contract: 2281-12-12

Lab File ID: 02099646.16

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 02/08/96

Date Analyzed (2): \_\_\_\_\_

Time Analyzed (2): \_\_\_\_\_

Instrument ID (2):

GC Column (2): ID: (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

|    | CLIENT       | LAB           | DATE       | DATE       |
|----|--------------|---------------|------------|------------|
|    | SAMPLE NO.   | SAMPLE ID     | ANALYZED 1 | ANALYZED 2 |
|    | =====        | =====         | =====      | =====      |
| 01 | AFTOUT-EXPLS | 9602L963-026  | 02/09/96   |            |
| 02 | AFTOUT-EXPLS | 9602L963-028  | 02/09/96   |            |
| 03 | AFTOUT-EXPLS | 9602L963-030  | 02/08/96   |            |
| 04 | AFTIN-EXP-R2 | 9602L963-032  | 02/08/96   |            |
| 05 | AFTIN-EXP-R3 | 9602L963-034  | 02/09/96   |            |
| 06 | BLKBS        | 96LLC017-MB1S | 02/09/96   |            |

COMMENTS : \_\_\_\_\_

2/12/96

## 4C

| BLK

Contract: 2281-12-12

Lab File ID: 02099646.17

Extraction: (SepF/Cont/Sonc)      SONC

Date Extracted: 02/08/96

Date Analyzed (2): \_\_\_\_\_

Time Analyzed (2): \_\_\_\_\_

Instrument ID (2) :

GC Column (2): ID: \_\_\_\_\_ (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

|    | CLIENT       | LAB           | DATE       |
|----|--------------|---------------|------------|
|    | SAMPLE NO.   | SAMPLE ID     | ANALYZED 1 |
|    | =====        | =====         | =====      |
| 01 | AFTOUT-EXPLS | 9602L963-027  | 02/09/96   |
| 02 | AFTOUT-EXPLS | 9602L963-029  | 02/09/96   |
| 03 | AFTOUT-EXPLS | 9602L963-031  | 02/09/96   |
| 04 | AFTIN-EXP-R2 | 9602L963-033  | 02/09/96   |
| 05 | AFTIN-EXP-R2 | 9602L963-033  | 02/09/96   |
| 06 | AFTIN-EXP-R3 | 9602L963-035  | 02/09/96   |
| 07 | AFTIN-EXP-R3 | 9602L963-035  | 02/09/96   |
| 08 | AFTIN-EXP-R3 | 9602L963-035  | 02/09/96   |
| 09 | BLKBS        | 96LLC016-MB1S | 02/09/96   |

COMMENTS : \_\_\_\_\_

02/12/56

**WESTON**

**Analysis Run Logs**

## HPLC ANALYSIS LOG

MOBILE PHASE: 5% H<sub>2</sub>O, 32.7% MeOH,  
13.2% ACN, 0.1% IPA @ 38°C  
COLUMN TYPE: B+J ODS 25cm x 4.6mm  
ANALYST: G. Heinweber  
FLOW RATE: 1.4ml/min  
COLUMN SERIAL #: 21856  
SPIKING STANDARD — 461129

|               | 01                | 02          | 03 | 04 | 05 | 06 | 07 |
|---------------|-------------------|-------------|----|----|----|----|----|
| RAW2:AO667551 | 01/24/96 16:23:23 | STD 461118F |    |    |    |    |    |
| RAW2:AO667554 | 01/24/96 16:43:07 | STD 461118E |    |    |    |    |    |
| RAW2:AO667557 | 01/24/96 17:02:54 | STD 461118D |    |    |    |    |    |
| RAW2:AO667560 | 01/24/96 17:22:36 | STD 461118C |    |    |    |    |    |
| RAW2:AO667569 | 01/24/96 17:42:17 | STD 461118B |    |    |    |    |    |
| RAW2:AO667572 | 01/24/96 18:02:00 | STD 461118A |    |    |    |    |    |
| RAW2:AO667577 | 01/24/96 18:21:48 | STD 461118X |    |    |    |    |    |

4/6/24

0630 Primary

12/1/96

G. Hernandez

12/1/96

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HPLC ANALYSIS LOG

INSTRUMENT #: \_\_\_\_\_ ANALYST: \_\_\_\_\_  
DETECTOR: \_\_\_\_\_ FLOW RATE: \_\_\_\_\_  
WAVELENGTH: \_\_\_\_\_ COLUMN SERIAL #: \_\_\_\_\_  
CALIBRATION STANDARD: \_\_\_\_\_  
MOBILE PHASE: See Page 1  
COLUMN TYPE: \_\_\_\_\_  
SPIKING STANDARD: \_\_\_\_\_

| ANALYSIS DATE | TIME        | RUN NO.       | INJ VOL       | TRAY NO. | RFW SAMPLE NUMBER | CLAS ID #           | LOT ID # | COMMENTS |
|---------------|-------------|---------------|---------------|----------|-------------------|---------------------|----------|----------|
| 25            | 02089646.25 | RAW2:B8673074 | RAW2:B8673074 | 02/08/96 | 18:56:15          | 9602L963-024 5000   |          |          |
| 26            | 02089646.26 | RAW2:B8673078 | RAW2:B8673078 | 02/08/96 | 19:15:53          | 9602L916-018D1      |          |          |
| 27            | 02089646.27 | RAW2:B8673083 | RAW2:B8673083 | 02/08/96 | 19:35:30          | IBLK                |          |          |
| 28            | 02089646.28 | RAW2:B8673091 | RAW2:B8673091 | 02/08/96 | 19:55:11          | STD 461118D         |          |          |
| 29            | 02089646.29 | RAW2:B8673099 | RAW2:B8673099 | 02/08/96 | 20:14:46          | 9602L916-013D1 5000 |          |          |
| 30            | 02089646.30 | RAW2:B8673105 | RAW2:B8673105 | 02/08/96 | 20:34:22          | 9602L963-019D1 100  |          |          |
| 31            | 02089646.31 | RAW2:B8673114 | RAW2:B8673114 | 02/08/96 | 20:54:01          | 9602L963-024D1 100  |          |          |
| 32            | 02089646.32 | RAW2:B8673119 | RAW2:B8673119 | 02/08/96 | 21:13:37          | 9602L916-024D1 100  |          |          |
| 33            | 02089646.33 | RAW2:B8673124 | RAW2:B8673124 | 02/08/96 | 21:33:12          | INST. BLANK         |          |          |
| 34            | 02089646.34 | RAW2:B8673131 | RAW2:B8673131 | 02/08/96 | 21:52:48          | 9602L916-020        |          |          |
| 35            | 02089646.35 | RAW2:B8673138 | RAW2:B8673138 | 02/08/96 | 22:12:24          | 9602L916-023 2000   |          |          |
| 36            | 02089646.36 | RAW2:B8673145 | RAW2:B8673145 | 02/08/96 | 22:32:02          | 9602L963-030        |          |          |
| 37            | 02089646.37 | RAW2:B8673152 | RAW2:B8673152 | 02/08/96 | 22:51:38          | 9602L963-032 5000   |          |          |
| 38            | 02089646.38 | RAW2:B8673155 | RAW2:B8673155 | 02/08/96 | 23:11:14          | 9602L963-034 5000   |          |          |
| 39            | 02089646.39 | RAW2:B8673166 | RAW2:B8673166 | 02/08/96 | 23:30:49          | 9602L963-032D1 100  |          |          |
| 40            | 02089646.40 | RAW2:B8673169 | RAW2:B8673169 | 02/08/96 | 23:50:26          | INST. BLANK         |          |          |
| 41            | 02089646.41 | RAW2:B9673178 | RAW2:B9673178 | 02/09/96 | 00:10:07          | STD 461118D         |          |          |
| 42            | 02089646.42 | RAW2:B9673183 | RAW2:B9673183 | 02/09/96 | 00:29:45          | 9602L963-034D1 100  |          |          |
| 43            | 02089646.43 | RAW2:B9673190 | RAW2:B9673190 | 02/09/96 | 00:49:20          | INST. BLANK         |          |          |
| 44            | 02089646.44 | RAW2:B9673195 | RAW2:B9673195 | 02/09/96 | 01:09:01          | STD 461118D         |          |          |

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## HPLC ANALYSIS LOG

INSTRUMENT #:

DETECTOR:

MOBILE PHASE:

COLUMN TYPE:

ANALYST:

WAVELENGTH:

COLUMNS SERIAL #:

FLOW RATE:

COLUMNS SERIAL #:

CALIBRATION STANDARD

SPIKING STANDARD

| SAMPLE ID | FILE ID     | DATE/TIME         | DESCRIPTION   | ID # | COMMENTS |
|-----------|-------------|-------------------|---------------|------|----------|
| 01        | 02089646.01 | 02/08/96 11:05:02 | STD 461118D   |      |          |
| 02        | 02089646.02 | 02/08/96 11:24:42 | STD 461118D   |      |          |
| 03        | 02089646.03 | 02/08/96 11:44:23 | STD 461118D   |      |          |
| 04        | 02089646.04 | 02/08/96 12:04:01 | 96L9C013-MB1  |      |          |
| 05        | 02089646.05 | 02/08/96 12:23:40 | 96L9C013-MB1S |      |          |
| 06        | 02089646.06 | 02/08/96 12:43:20 | 9602L916-004  |      |          |
| 07        | 02089646.07 | 02/08/96 13:02:58 | 9602L916-009  |      |          |
| 08        | 02089646.08 | 02/08/96 13:22:35 | 9602L916-018  |      |          |
| 09        | 02089646.09 | 02/08/96 13:42:12 | 9602L916-013  |      |          |
| 10        | 02089646.10 | 02/08/96 14:01:50 | INST. BLANK   |      |          |
| 11        | 02089646.11 | 02/08/96 14:21:30 | 96L9C014-MB1  |      |          |
| 12        | 02089646.12 | 02/08/96 14:41:07 | 96L9C014-MB1S |      |          |
| 13        | 02089646.13 | 02/08/96 15:00:46 | 9602L916-021  |      |          |
| 14        | 02089646.14 | 02/08/96 15:20:24 | 9602L916-022  |      |          |
| 15        | 02089646.15 | 02/08/96 15:40:02 | IBLK          |      |          |
| 16        | 02089646.16 | 02/08/96 15:59:43 | STD 461118D   |      |          |
| 17        | 02089646.17 | 02/08/96 16:19:21 | 9602L916-024  |      |          |
| 18        | 02089646.18 | 02/08/96 16:38:57 | 9602L916-026  |      |          |
| 19        | 02089646.19 | 02/08/96 16:58:34 | 96L9C015-MB1  |      |          |
| 20        | 02089646.20 | 02/08/96 17:18:11 | 96L9C015-MB1S |      |          |
| 21        | 02089646.21 | 02/08/96 17:37:50 | 9602L963-004  |      |          |
| 22        | 02089646.22 | 02/08/96 17:57:28 | 9602L963-009  |      |          |
| 23        | 02089646.23 | 02/08/96 18:17:03 | 9602L963-014  |      |          |
| 24        | 02089646.24 | 02/08/96 18:36:39 | 9602L963-019  |      |          |

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HPLC ANALYSIS LOG

INSTRUMENT #: \_\_\_\_\_  
DETECTOR: \_\_\_\_\_  
WAVELENGTH: \_\_\_\_\_  
CALIBRATION STANDARD: \_\_\_\_\_  
MOBILE PHASE: See page 1  
COLUMN TYPE: \_\_\_\_\_  
SPIKING STANDARD: \_\_\_\_\_  
ANALYST: \_\_\_\_\_  
FLOW RATE: \_\_\_\_\_  
COLUMN SERIAL #: \_\_\_\_\_

| SAMPLE ID | FILE ID       | DATE/TIME         | DESCRIPTION        | IT ID # | COMMENTS           |
|-----------|---------------|-------------------|--------------------|---------|--------------------|
| 01        | RAW2:B9673290 | 02/09/96 08:56:39 | STD 461118D        |         |                    |
| 02        | RAW2:B9673299 | 02/09/96 09:16:19 | STD 461118D        |         |                    |
| 03        | RAW2:B9673300 | 02/09/96 09:35:59 | STD 461118D        |         |                    |
| 04        | RAW2:B9673307 | 02/09/96 09:55:39 | 9602L963-004       |         | Sample ID 01/09/96 |
| 05        | RAW2:B9673311 | 02/09/96 10:15:18 | 9602L963-009       |         | 09 9602L963-MB1S   |
| 06        | RAW2:B9673322 | 02/09/96 10:34:57 | 9602L963-014       |         |                    |
| 07        | RAW2:B9673324 | 02/09/96 10:54:36 | 9602L916-023D1 00  |         | 10 9602L916-006    |
| 08        | RAW2:B9673331 | 02/09/96 11:14:13 | 96LLC014-MB1S      |         |                    |
| 09        | RAW2:B9673337 | 02/09/96 11:33:51 | 96LLC017-MB1       |         | 11 9602L916-025    |
| 10        | RAW2:B9673341 | 02/09/96 11:53:30 | 96LLC017-MB1       |         |                    |
| 11        | RAW2:B9673353 | 02/09/96 12:13:09 | 9602L916-006 005 2 |         | 12 9602L916-026    |
| 12        | RAW2:B9673374 | 02/09/96 12:32:47 | 9602L916-025 2     |         |                    |
| 13        | RAW2:B9673380 | 02/09/96 12:52:24 | 9602L963-025 2     |         | 13 9602L916-028    |
| 14        | RAW2:B9673391 | 02/09/96 13:12:02 | IBLK               |         | 16 96LLC017-MB1    |
| 15        | RAW2:B9673399 | 02/09/96 13:31:43 | STD 461118D        |         |                    |
| 16        | RAW2:B9673415 | 02/09/96 13:51:22 | 9602L963-028 2     |         | 96LLC017-MB1       |
| 17        | RAW2:B9673418 | 02/09/96 14:10:59 | 96LLC016-MB1       |         |                    |
| 18        | RAW2:B9673421 | 02/09/96 14:30:35 | 96LLC016-MB1S      |         |                    |
| 19        | RAW2:B9673433 | 02/09/96 14:50:12 | 9602L963-027       |         |                    |
| 20        | RAW2:B9673439 | 02/09/96 15:09:50 | 9602L963-029       |         |                    |
| 21        | RAW2:B9673448 | 02/09/96 15:29:29 | 9602L963-031       |         |                    |
| 22        | RAW2:B9673460 | 02/09/96 15:49:07 | 9602L963-033 00    |         |                    |
| 23        | RAW2:B9673464 | 02/09/96 16:08:43 | 9602L963-035 00    |         |                    |
| 24        | RAW2:B9673467 | 02/09/96 16:28:19 | 9602L963-033D1     |         |                    |



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## HPLC ANALYSIS LOG

INSTRUMENT #:

DETECTOR:

MOBILE PHASE: Sealag 1

ANALYST:

WAVELENGTH:

FLOW RATE:

CALIBRATION STANDARD

COLUMN TYPE:

COLUMN SERIAL #:

SPIKING STANDARD

| ANALYSIS |             | RUN           |     | INJ |     | TRAY |     | RFW SAMPLE<br>NUMBER | CLAS ID #       | LOT ID # | COMMENTS |
|----------|-------------|---------------|-----|-----|-----|------|-----|----------------------|-----------------|----------|----------|
| DATE     | TIME        | NO.           | NO. | VOL | VOL | NO.  | NO. |                      |                 |          |          |
| 25       | 02099646.25 | RAW2:B9673477 |     |     |     |      |     | 02/09/96 16:47:56    | 9602L963-035D1  |          |          |
| 26       | 02099646.26 | RAW2:B9673489 |     |     |     |      |     | 02/09/96 17:07:34    | IBLK            |          |          |
| 27       | 02099646.27 | RAW2:B9673495 |     |     |     |      |     | 02/09/96 17:27:15    | STD 461118D     |          |          |
| 28       | 02099646.28 | RAW2:B9673499 |     |     |     |      |     | 02/09/96 17:46:51    | 96LLOC017-MB1A1 |          |          |
| 29       | 02099646.29 | RAW2:B9673513 |     |     |     |      |     | 02/09/96 18:06:27    | 96LLOC017-MB1SA |          |          |
| 30       | 02099646.30 | RAW2:B9673517 |     |     |     |      |     | 02/09/96 18:26:04    | 9602L916-006A1  |          |          |
| 31       | 02099646.31 | RAW2:B9673524 |     |     |     |      |     | 02/09/96 18:45:42    | 9602L916-025A1  |          |          |
| 32       | 02099646.32 | RAW2:B9673535 |     |     |     |      |     | 02/09/96 19:05:19    | 9602L963-026A1  |          |          |
| 33       | 02099646.33 | RAW2:B9673539 |     |     |     |      |     | 02/09/96 19:24:54    | 9602L963-028A1  |          |          |
| 34       | 02099646.34 | RAW2:B9673550 |     |     |     |      |     | 02/09/96 19:44:29    | 96LLOC019-MB1   |          |          |
| 35       | 02099646.35 | RAW2:B9673560 |     |     |     |      |     | 02/09/96 20:04:06    | 96LLOC019-MB1S  |          |          |
| 36       | 02099646.36 | RAW2:B9673569 |     |     |     |      |     | 02/09/96 20:23:44    | 9602L974-001    | 100      |          |
| 37       | 02099646.37 | RAW2:B9673577 |     |     |     |      |     | 02/09/96 20:43:21    | 9602L999-001    | 100      |          |
| 38       | 02099646.38 | RAW2:B9673581 |     |     |     |      |     | 02/09/96 21:02:57    | IBLK            |          |          |
| 39       | 02099646.39 | RAW2:B9673591 |     |     |     |      |     | 02/09/96 21:22:38    | STD 461118D     |          |          |
| 40       | 02099646.40 | RAW2:B9673604 |     |     |     |      |     | 02/09/96 21:42:15    | 9602L999-002    | 100      |          |
| 41       | 02099646.41 | RAW2:B9673612 |     |     |     |      |     | 02/09/96 22:01:53    | 9602L974-001D1  |          |          |
| 42       | 02099646.42 | RAW2:B9673622 |     |     |     |      |     | 02/09/96 22:21:31    | 9602L999-001A1  |          |          |
| 43       | 02099646.43 | RAW2:B9673633 |     |     |     |      |     | 02/09/96 22:41:09    | 9602L999-002D1  |          |          |
| 44       | 02099646.44 | RAW2:B9673641 |     |     |     |      |     | 02/09/96 23:00:43    | 9602L963-035D2  | 10       |          |
| 45       | 02099646.45 | RAW2:B9673645 |     |     |     |      |     | 02/09/96 23:20:20    | 96LLOC018-MB1   |          |          |
| 46       | 02099646.46 | RAW2:B9673658 |     |     |     |      |     | 02/09/96 23:39:58    | 96LLOC018-MB1S  |          |          |
| 47       | 02099646.47 | RAW2:B9673663 |     |     |     |      |     | 02/09/96 23:59:36    | 9602L952-001    |          |          |
| 48       | 02099646.48 | RAW2:BA673672 |     |     |     |      |     | 02/10/96 00:19:12    | 9602L952-002    |          |          |

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HPLC ANALYSIS LOG

INSTRUMENT #: \_\_\_\_\_ ANALYST: \_\_\_\_\_  
DETECTOR: \_\_\_\_\_ MOBILE PHASE: Salage 1 FLOW RATE: \_\_\_\_\_  
WAVELENGTH: \_\_\_\_\_ COLUMN TYPE: \_\_\_\_\_ COLUMN SERIAL #: \_\_\_\_\_  
CALIBRATION STANDARD \_\_\_\_\_ SPIKING STANDARD \_\_\_\_\_

| ANALYSIS DATE | TIME        | RUN NO.       | INJ VOL | TRAY NO. | RFW SAMPLE NUMBER | CLAS ID #     | LOT ID # | COMMENTS |
|---------------|-------------|---------------|---------|----------|-------------------|---------------|----------|----------|
| 49            | 02099646.49 | RAW2:BA673682 |         |          | 02/10/96 00:38:47 | 9602L952-003  |          |          |
| 50            | 02099646.50 | RAW2:BA673691 |         |          | 02/10/96 00:58:24 | INST. BLANK   |          |          |
| 51            | 02099646.51 | RAW2:BA673693 |         |          | 02/10/96 01:18:05 | STD 461118D   |          |          |
| 52            | 02099646.52 | RAW2:BA673703 |         |          | 02/10/96 01:37:43 | 9602L952-004  |          |          |
| 53            | 02099646.53 | RAW2:BA673712 |         |          | 02/10/96 01:57:18 | 9602L952-005  |          |          |
| 54            | 02099646.54 | RAW2:BA673717 |         |          | 02/10/96 02:16:53 | 9602L952-007  |          |          |
| 55            | 02099646.55 | RAW2:BA673724 |         |          | 02/10/96 02:36:30 | 9602L952-008  |          |          |
| 56            | 02099646.56 | RAW2:BA673734 |         |          | 02/10/96 02:56:09 | 9602L952-009  |          |          |
| 57            | 02099646.57 | RAW2:BA673743 |         |          | 02/10/96 03:15:46 | 9602L952-010  |          |          |
| 58            | 02099646.58 | RAW2:BA673749 |         |          | 02/10/96 03:35:22 | 9602L952-011  |          |          |
| 59            | 02099646.59 | RAW2:BA673753 |         |          | 02/10/96 03:54:56 | 9602L952-012  |          |          |
| 60            | 02099646.60 | RAW2:BA673765 |         |          | 02/10/96 04:14:33 | 9602L952-013  |          |          |
| 61            | 02099646.61 | RAW2:BA673770 |         |          | 02/10/96 04:34:11 | 9602L952-014  |          |          |
| 62            | 02099646.62 | RAW2:BA673774 |         |          | 02/10/96 04:53:49 | INST. BLANK   |          |          |
| 63            | 02099646.63 | RAW2:BA673781 |         |          | 02/10/96 05:13:29 | STD 461118D   |          |          |
| 64            | 02099646.64 | RAW2:BA673788 |         |          | 02/10/96 05:33:05 | 9602L952-015  |          |          |
| 65            | 02099646.65 | RAW2:BA673792 |         |          | 02/10/96 05:52:42 | 9602L952-015S |          |          |
| 66            | 02099646.66 | RAW2:BA673797 |         |          | 02/10/96 06:12:23 | 9602L952-015T |          |          |
| 67            | 02099646.67 | RAW2:BA673805 |         |          | 02/10/96 06:32:01 | 9602L952-016  |          |          |
| 68            | 02099646.68 | RAW2:BA673810 |         |          | 02/10/96 06:51:38 | INST. BLANK   |          |          |
| 69            | 02099646.69 | RAW2:BA673815 |         |          | 02/10/96 07:11:18 | STD 461118D   |          |          |

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## HPLC ANALYSIS LOG

INSTRUMENT #:

DETECTOR:

**WAVELENGTH:**

## CALIBRATION STANDARD

MOBILE PHASE: 2000

ANALYST: \_\_\_\_\_

**FLOW RATE:**

**COLUMN SERIAL #:** \_\_\_\_\_

[illegible]REVIEWED BY/DATE  
C. L. King, Jr. 12/96

三

## HPLC ANALYSIS LOG

221

INSTRUMENT #: HPLC #2  
DETECTOR: UV 1650 UV  
WAVELENGTH: 254 nm  
CALIBRATION STANDARD 46113/41024011

MOBILE PHASE: 60% H<sub>2</sub>O / 40% ACN  
30°C  
COLUMN TYPE: Zorbax C8 4.6mm x 25cm  
SPIKING STANDARD NK

ANALYST: G. Heinzel  
FLOW RATE: 1.5 ml/min  
COLUMN SERIAL #: L17344

|    |             |               |                   |               |  |
|----|-------------|---------------|-------------------|---------------|--|
| 01 | 02069602.01 | RAW2:B6672149 | 02/06/96 09:41:44 | STD 461130F   |  |
| 02 | 02069602.02 | RAW2:B6672161 | 02/06/96 10:19:20 | STD 461130E   |  |
| 03 | 02069602.03 | RAW2:B6672171 | 02/06/96 10:56:55 | STD 461130D   |  |
| 04 | 02069602.04 | RAW2:B6672180 | 02/06/96 11:34:29 | STD 461130C   |  |
| 05 | 02069602.05 | RAW2:B6672186 | 02/06/96 12:12:05 | STD 461130B   |  |
| 06 | 02069602.06 | RAW2:B6672197 | 02/06/96 12:49:40 | STD 461130A   |  |
| 07 | 02069602.07 | RAW2:B6672208 | 02/06/96 13:27:15 | STD 41024011F |  |
| 08 | 02069602.08 | RAW2:B6672221 | 02/06/96 14:28:04 | STD 41024011E |  |
| 09 | 02069602.09 | RAW2:B6672232 | 02/06/96 14:50:37 | STD 41024011D |  |
| 10 | 02069602.10 | RAW2:B6672236 | 02/06/96 15:13:12 | STD 41024011C |  |
| 11 | 02069602.11 | RAW2:B6672243 | 02/06/96 15:35:47 | STD 41024011B |  |
| 12 | 02069602.12 | RAW2:B6672251 | 02/06/96 15:58:21 | STD 41024011A |  |
| 13 | 02069602.13 | RAW2:B6672258 | 02/06/96 16:20:55 | OX            |  |
| 14 | 02069602.14 | RAW2:B6672264 | 02/06/96 16:43:29 | 9601L838-001  |  |
| 15 | 02069602.15 | RAW2:B6672274 | 02/06/96 17:06:02 | 9601L838-002  |  |
| 16 | 02069602.16 | RAW2:B6672281 | 02/06/96 17:28:37 | 9601L838-004  |  |
| 17 | 02069602.17 | RAW2:B6672292 | 02/06/96 17:51:12 | 9601L838-006  |  |
| 18 | 02069602.18 | RAW2:B6672301 | 02/06/96 18:13:43 | 9601L838-008  |  |
| 19 | 02069602.20 | RAW2:B6672318 | 02/06/96 18:58:48 | INST. BLANK   |  |
| 20 | 02069602.21 | RAW2:B6672324 | 02/06/96 19:21:22 | STD 461130D   |  |
| 21 | 02069602.22 | RAW2:B6672339 | 02/06/96 19:43:56 | STD 41024011D |  |

COMMENTS

RFW 21-21-022/B-01/02

REVIEWED BY/DATE

PAGE #

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WESTON®

## HPLC ANALYSIS LOG

INSTRUMENT #: \_\_\_\_\_

DETECTOR: \_\_\_\_\_

WAVELENGTH: \_\_\_\_\_

CALIBRATION STANDARD \_\_\_\_\_

MOBILE PHASE: See page 8

COLUMN TYPE: \_\_\_\_\_

SPIKING STANDARD \_\_\_\_\_

ANALYST: \_\_\_\_\_

FLOW RATE: \_\_\_\_\_

COLUMN SERIAL #: \_\_\_\_\_

| SAMPLE ID | FILE ID     | DATE/TIME         | DESCRIPTION         | IT ID # | COMMENTS                    |
|-----------|-------------|-------------------|---------------------|---------|-----------------------------|
| 01        | 02099602.01 | 02/09/96 15:20:12 | STD 461130D         |         |                             |
| 02        | 02099602.02 | 02/09/96 15:42:49 | STD 461130D         |         |                             |
| 03        | 02099602.03 | 02/09/96 16:05:26 | STD 461130D         |         |                             |
| 04        | 02099602.04 | 02/09/96 16:29:37 | 9602L916-018        |         |                             |
| 05        | 02099602.05 | 02/09/96 16:52:12 | 9602L916-018D1 10   |         | Used 022A6 without level A. |
| 06        | 02099602.06 | 02/09/96 17:14:48 | 9602L916-013        |         |                             |
| 07        | 02099602.07 | 02/09/96 17:37:24 | 9602L916-024        |         |                             |
| 08        | 02099602.08 | 02/09/96 17:59:57 | 9602L916-024D1 10   |         | and 02206 for               |
| 09        | 02099602.09 | 02/09/96 18:22:31 | 9602L916-026        |         |                             |
| 10        | 02099602.10 | 02/09/96 18:45:06 | 9602L963-019        |         | TALCM 6/2/12/96             |
| 11        | 02099602.11 | 02/09/96 19:07:41 | 9602L963-019D1      |         |                             |
| 12        | 02099602.12 | 02/09/96 19:30:15 | 9602L963-024        |         |                             |
| 13        | 02099602.13 | 02/09/96 19:52:49 | 9602L963-024        |         |                             |
| 14        | 02099602.14 | 02/09/96 20:15:22 | 9602L963-024D1      |         |                             |
| 15        | 02099602.15 | 02/09/96 20:37:56 | IBLK                |         |                             |
| 16        | 02099602.16 | 02/09/96 21:00:31 | STD 461130D         |         |                             |
| 17        | 02099602.17 | 02/09/96 21:23:05 | 9602L916-020        |         |                             |
| 18        | 02099602.18 | 02/09/96 21:45:37 | 9602L916-023        |         |                             |
| 19        | 02099602.19 | 02/09/96 22:08:09 | 9602L916-023D1 2000 |         |                             |
| 20        | 02099602.20 | 02/09/96 22:30:43 | 9602L963-030        |         |                             |
| 21        | 02099602.21 | 02/09/96 22:53:17 | 9602L963-032        |         |                             |
| 22        | 02099602.22 | 02/09/96 23:15:50 | 9602L963-034        |         |                             |
| 23        | 02099602.23 | 02/09/96 23:38:21 | 9602L916-013D1 100  |         |                             |
| 24        | 02099602.24 | 02/10/96 00:00:53 | 9602L974-001 100    |         |                             |
|           |             |                   | 9602L999-001 100    |         |                             |

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REVIEWED BY/DATE G. Leinhardt 2/12/96

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~~End of the Day~~

REVIEWED BY/DATE G. Beaumelle 2/12/96

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## HPLC ANALYSIS LOG

INNT #:

**MOBILE PHASE:**

**COLUMN TYPE:**

## SPIKING STANDARD

**FLOW RATE:**

**COLUMN SERIAL #:**

**AFW 21-21-022/B-01/92**

REVIEWED BY/DATE

**PAGE #**

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**WESTON**

**Standards Preparation Records**



WESTON®

# HPLC STANDARDS PREPARATION LOG

## Preparation of Stock Mixture Solution (Multi-Component)

Explosives Calibration Mix

MIXTURE I.D. #: 46118

DATE/ANALYST: 4/11/95

EXPIRATION DATE:

DATE REMOVED:

Logbook #:

4611

| STOCK PARENT              |           | % PURITY    | STANDARD                          | FINAL VOLUME (mL)              | SOLVENT | COMPONENT CONC. (w/units) |
|---------------------------|-----------|-------------|-----------------------------------|--------------------------------|---------|---------------------------|
| 15 Components             |           |             |                                   |                                |         |                           |
| Component                 | CAS #     | Purity %    | GRAVIMETRIC Concentration (µg/mL) | ANALYTIC Concentration (µg/mL) |         |                           |
| 2-Amino-4,6-dinitrophenol | 3502-79-2 | 100 (GC/MS) | 194651.0                          | 88.3                           |         |                           |
| 4-Amino-2,6-dinitrophenol | 99-05-0   | 100 (GC/MS) | 121142.0                          | 88.3                           |         |                           |
| 1,3-Dinitrobenzene        | 88-20-2   | 99.3 (HPLC) | 289141.0                          | 88.3                           |         |                           |
| 2,6-Dinitrophenol         | 88-72-2   | 100 (GC/MS) | 9845.0                            | 88.3                           |         |                           |
| Metacresol                | 88-72-2   | 100 (GC/MS) | 9845.0                            | 88.3                           |         |                           |
| 4-Nitrophenol             | 88-48-1   | 99.8        | 9845.0                            | 88.3                           |         |                           |
| 3-Nitrophenol             | 88-48-1   | 99.8        | 9845.0                            | 88.3                           |         |                           |
| 4-Nitrophenol             | 121-82-4  | 99.8        | 9845.0                            | 88.3                           |         |                           |
| ROX                       | 479-45-6  | 99.8        | 9845.0                            | 88.3                           |         |                           |
| TNT                       | 118-96-7  | 100         | 9845.0                            | 88.3                           |         |                           |
| 1,3,5-Trinitrobenzene     | 58-29-0   | 99.54       | 9845.0                            | 88.3                           |         |                           |

EXPANSION: On-going Stability Program

EXPIRATION: 4/11/95

ANALYST: 46118

DATE: 4/11/95

LOGBOOK # 4611

QUALITY CONTROL MANAGER: Charles M. Wilson

1. All weights are traceable through National Bureau of Standards Test No. 73124C589 X

2. Analyte Conc. = Purity x Gravimetric Conc.

3. Analyte Conc. = Purity x Gravimetric Conc.

| Ampule ID | Date Opened | Disposal Date |
|-----------|-------------|---------------|
| A         | 4/11/95     | 1/24/96       |
| B         | 1/24/96     |               |
| C         | 1/24/96     |               |
| D         |             |               |
| E         |             |               |
| F         |             |               |
| G         |             |               |
| H         |             |               |
| I         |             |               |
| J         |             |               |

'Date removed is the date the standards are given to the Waste Disposal Unit for disposition.

REVIEWED BY/DATE:

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HFV 21-21-036/D-03/94

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**WESTON®**

## HPLC STANDARDS PREPARATION LOG

## Preparation of Stock Mixture Solution (Multi-Component)

461129

Explosive Spike

EXPIRATION DATE: Ongoing - Tentative 1/1/97

MIXTURE I.D.#:


**DATE/ANALYST:**

Cheryl

Logbook #: 4611

# CERTIFICATE OF ANALYSIS

Recd 12/14/15 471129



**EM SCIENCE**  
A Division of EM Industries, Inc.  
P.O. Box 70  
180 S. Demarest Road  
Gibbstown, NJ 08027

|                   |                                            |                |                           |               |
|-------------------|--------------------------------------------|----------------|---------------------------|---------------|
| PRODUCT: EPS00314 | DESCRIPTION: Custom Explosives Spiking Mix | LOT #: 095-190 | SOLVENT: MeCN: MeOH (9:1) | 14 Components |
|-------------------|--------------------------------------------|----------------|---------------------------|---------------|

| Component                   | CAS #      | Purity %     | Concentration <sup>1</sup> | Concentration <sup>2</sup> |
|-----------------------------|------------|--------------|----------------------------|----------------------------|
| 2-Amino-4,6-dinitrofluorene | 35572-76-2 | 100 (GC/MS)  | 20.02                      | 20.02                      |
| 2-Amino-2,6-dinitrofluorene | 194651-0   | 100 (GC/MS)  | 20.00                      | 20.00                      |
| 1,3-Dinitrofluorene         | 99-65-0    | 98.2         | 20.00                      | 19.64                      |
| 2,4-Dinitrofluorene         | 121-14-2   | 98.0         | 20.00                      | 19.64                      |
| 2,6-Dinitrofluorene         | 50520-2    | 98.3         | 21.00                      | 20.85                      |
| MDMX                        | 269141-0   | 99.3         | 176.4                      | 175.2                      |
| Nitrofluorene               | 99-95-3    | 99.9 (GC/MS) | 21.56                      | 21.54                      |
| 2-Nitrofluorene             | 86-72-2    | 98.0         | 80.5                       | 79.7                       |
| 2-Nitrofluorene             | 99-08-1    | 98.2         | 80.2                       | 79.6                       |
| 4-Nitrofluorene             | 99-99-0    | 98.0         | 240.9                      | 238.5                      |
| ROX                         | 121-82-4   | 98.6         | 80.3                       | 79.2                       |
| TMF                         | 479-54-8   | 98.8         | 52.00                      | 51.90                      |
| 1,3,5-Trinitrofluorene      | 118-96-7   | 100 (GC/MS)  | 20.12                      | 20.12                      |
|                             | 99-76-4    | 98.4         | 20.14                      | 19.82                      |

1. All weights are traceable through National Bureau of Standards Test No. 7312C3659 X.  
2. Analysis Cert. = Purity X Gravimetric Cert.

For Technical Assistance Call: (800) 222-0342

| FINAL<br>VOLUME<br>(mL) | SOLVENT | COMPONENT<br>CONC. (w/units) |
|-------------------------|---------|------------------------------|
|                         |         | A                            |
|                         |         | B                            |
|                         |         | C                            |
|                         |         | D                            |
|                         |         | E                            |
|                         |         | F                            |
|                         |         | G                            |
|                         |         | H                            |
|                         |         | I                            |
|                         |         | J                            |

Disposal Date \_\_\_\_\_ Date Opened \_\_\_\_\_

12/20/95  
1/20/96  
*[Signature]*

2/17/2008  
*[Signature]*

all 4/45

**Do the standards are given to the students**

REVIEWED BY/DATE:

RFW 21-21-036/D-03/94

**PAGE #**

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# HPLC STANDARDS PREPARATION LOGBOOK Preparation of Standard Dilutions (Single Component)

Logbook #: 4102

| COMPOUND     | STANDARD DILUTION I.D. | PARENT STANDARD I.D. | PARENT CONC. (w/units) | PARENT VOLUME (mL) | TOTAL VOLUME (mL) | SOLVENT      | PREPARED STANDARD CONC. (w/units) | DATE/ ANALYST | REVIEWED BY/DATE | DATE REMOVED <sup>1</sup> |
|--------------|------------------------|----------------------|------------------------|--------------------|-------------------|--------------|-----------------------------------|---------------|------------------|---------------------------|
| Kerosene     | 41023801               | 41021307             | 100 mg/mL              | 100 µL             | 10 mL             | Hexane       | 1000 µg/mL                        | 5/15/95 Gm    | 6/1/95 Gm        | 8/1/95 Gm                 |
| Triphenylene | 41023802               | 41021507             | 1000 µg/mL             | 1250 µL            | 25 mL             | ACN          | 50 µg/mL                          | 5/16/95 Gm    | 6/1/95 Gm        | 11/21/95 Gm               |
| KEROSENE     | 41023803               | Acu Standard 025-235 |                        |                    | 1 mL              | DCM          | 20 µg/mL                          | 6/1/95 Gm     | 6/1/95 Gm        | 2/1/96 Gm                 |
| Diesel fuel  | 41023804               | Acu Standard 055-314 |                        | -                  | 5 mL              | DCM          | 50 µg/mL                          | 6/1/95 Gm     | 6/1/95 Gm        |                           |
| GRAVINE      | 41023805               | Acu Std 123-180      |                        |                    | 1 mL              | Isocetane    | 100 µg/mL                         | 6/1/95 Gm     | 6/1/95 Gm        | 2/1/96 Gm                 |
| DIESEL FUEL  | 41023806               | Acu Std 084-259      |                        |                    | 1 mL              | Isocetane    | 100 µg/mL                         | 6/1/95 Gm     | 6/1/95 Gm        | 2/1/96 Gm                 |
| JET FUEL     | 41023807               | Acu Std 123-192      |                        |                    | 1 mL              | Isocetane    | 100 µg/mL                         | 6/1/95 Gm     | 6/1/95 Gm        | 2/1/96 Gm                 |
| HMX          | 41023808               | EM Science 114-237   |                        |                    | 1 mL              | Methanol 1:1 | 993 µg/mL                         | 6/1/95 Gm     | 6/1/95 Gm        | 11/6/95 Gm                |
| RDX          | 41023809               | EM Science 015-022   |                        |                    | 1 mL              |              | 986 µg/mL                         | 6/1/95 Gm     | 6/1/95 Gm        | 11/6/95 Gm                |
| 1,3,5-TNB    | 41023810               | EM Science 114-237   |                        |                    | 1 mL              |              | 984 µg/mL                         | 6/1/95 Gm     | 6/1/95 Gm        | 11/6/95 Gm                |
| 1,3-DNB      | 41023811               | EM Science 035-207   |                        |                    | 1 mL              |              | 982 µg/mL                         | 6/1/95 Gm     | 6/1/95 Gm        | 11/6/95 Gm                |

<sup>1</sup>Date removed is the date standards are given to the Waste Disposal Unit for disposition.

RFW 21-21-036/C-03/94

# HPLC STANDARDS PREPARATION LOGBOOK

## Preparation of Standard Dilutions (Single Component)

Logbook #: 4102

| COMPOUND        | STANDARD DILUTION ID. | PARENT STANDARD ID. | PARENT CONC. (w/units) | PARENT VOLUME (mL) | TOTAL VOLUME (mL) | SOLVENT  | PREPARED STANDARD CONC. (w/units) | DATE/ANALYST | REVIEWED BY/DATE | DATE REMOVED <sup>1</sup> |
|-----------------|-----------------------|---------------------|------------------------|--------------------|-------------------|----------|-----------------------------------|--------------|------------------|---------------------------|
| Nitrobenzene    | 41023901              | EM Science 114-219  | 1000                   | 1                  | 1                 | 100% ACN | 1000                              | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| Tetralin        | 41023902              | EM Science 025-101  | 1000                   | 1                  | 1                 |          | 1000                              | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| 2-Amino-2,6-DNT | 41023903              | EM Science 104-266  | 1002                   | 1                  | 1                 |          | 1002                              | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| 2-Amino-2,6-DNT | 41023904              | EM Science 114-239  | 1000                   | 1                  | 1                 |          | 1000                              | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| TNT             | 41023905              | EM Science 114-220  | 1001                   | 1                  | 1                 |          | 1001                              | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| 2,6-DNT         | 41023906              | EM Science 124-511  | 1000                   | 1                  | 1                 |          | 1000                              | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| 2,4-DNT         | 41023907              | EM Science 015-266  | 988                    | 1                  | 1                 |          | 988                               | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| 2-Propyltoluene | 41023908              | EM Science 104-334  | 990                    | 1                  | 1                 |          | 990                               | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| 1-Nitrotoluene  | 41023909              | EM Science 015-152  | 990                    | 1                  | 1                 |          | 990                               | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| 3-Nitrotoluene  | 41023910              | EM Science 114-238  | 993                    | 1                  | 1                 |          | 993                               | 6/14/95      | GM 9/7/95        | 6/14/95                   |
| Ethylbenzene    | 41023911              | EM Science 114-238  | 993                    | 1                  | 1                 |          | 993                               | 6/14/95      | GM 9/7/95        | 6/14/95                   |

<sup>1</sup>Date removed is the date standards are given to the Waste Disposal Unit for disposition.

RFW 21-21-036/C-03/94

WESTON®

# HPLC STANDARDS PREPARATION LOG Preparation of Stock Mixture Solution (Multi-Component)

MIXTURE I.D.#: 461130 Explosive Conf. mix EXPIRATION DATE: 6/1/96 Logbook #: 4611  
DATE/ANALYST: 1/3/96 G. Leinweber DATE REMOVED: \_\_\_\_\_

| COMPONENT       | DESCRIPTION | STOCK PARENT<br>or NEAT<br>ID | <del>% Purity</del><br>(neat only)<br>Conc. | STANDARD<br>WEIGHT/VOLUME<br>(w/units) | FINAL<br>VOLUME<br>(mL) | SOLVENT | COMPONENT<br>CONC. (w/units) |
|-----------------|-------------|-------------------------------|---------------------------------------------|----------------------------------------|-------------------------|---------|------------------------------|
| HMX             |             | 41023808                      | 993 ug/mL                                   | 276.9 uL                               | 5 mL                    | ACN     | 55 ug/mL                     |
| RDX             |             | 41023805                      | 986                                         | 136.9                                  |                         |         | 27                           |
| 1,3,5-TNB       |             | 41023810                      | 984                                         | 32.0                                   |                         |         | 6.3                          |
| 1,3-DNB         |             | 41023811                      | 982                                         | 32.1                                   |                         |         | 6.3                          |
| Nitrobenzene    |             | 41023901                      | 1000                                        | 32.5                                   |                         |         | 6.5                          |
| Tetryl          |             | 41023902                      | 1000                                        | 94.0                                   |                         |         | 18.8                         |
| 2-Amino-4,6-DNT |             | 41023903                      | 1002                                        | 31.4                                   |                         |         | 6.3                          |
| 4-NIT           |             | 41023905                      | 1001                                        | 31.5                                   |                         |         | 6.3                          |
| 2,6-DNT         |             | 41023906                      | 1000                                        | 32.5                                   |                         |         | 6.5                          |
| 2,4-DNT         |             | 41023907                      | 988                                         | 31.9                                   |                         |         | 6.3                          |
|                 |             |                               |                                             |                                        |                         |         |                              |
|                 |             |                               |                                             |                                        |                         |         |                              |

\*Date removed is the date the standards are given to the Waste Disposal Unit for disposition.

REVIEWED BY/DATE: [Signature] 1/24/96

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RFW 21-21-036/D-03/94

Logbook #: 402HPLC STANDARDS LOGBOOK  
NEAT STANDARDS DOCUMENTATION

| COMPOUND                 | WESTON STANDARD ID | VENDOR                      | VENDOR LOT ID | PURITY % | EXPIRATION DATE | DATE RECEIVED | DATE REMOVED <sup>1</sup> |
|--------------------------|--------------------|-----------------------------|---------------|----------|-----------------|---------------|---------------------------|
| Nitroglycerin            | 41020701           | EM Science<br>EPH80280      | 104-275       |          | 9/1/98          | 8/31/95       |                           |
| Thylene Oxide            | 41020702           | EM Science<br>EP500745      | 105-168       |          | ongoing         | 10/17/95      |                           |
| 7H-Dibenzo(c,g)carbazole | 41020703           | EM Science<br>EPH00134      | 920-331       | 99.9     | ongoing         | 10/31/95      |                           |
| Dibenzo(a,h)pyrene       | 41020704           | EM Science<br>EPH00136      | 06-110        | -        | ongoing         | 10/31/95      |                           |
| Dibenzo(a,i)pyrene       | 41020705           | Radian<br>ERD-0001          | HKY-2604457   | 99%      |                 | Chick's       |                           |
| 3-Methylcholanthrene     | 41020706           | EM Science<br>EPH00112      | 111-098       | 98.7     | ongoing         | Chick's       |                           |
| Benzo(a)fluoranthene     | 41020707           | Radian<br>ERB-0005          | CAP-24573-50  | 98       |                 | Chick's       |                           |
| Dibenzo(gh)acridine      | 41020708           | Radian<br>ERD-013           | HKY-27456-44  | 99       |                 | Chick's       |                           |
| Dibenzo(a,j)acridine     | 41020709           | Radian<br>ERD-014           | HKY-27456-47  | 99       |                 | Chick's       |                           |
| 1,2-Dinitrobenzene       | 41020710           | EnviroStandard<br>M-8330-SS | 095-233       | 98.6     | ongoing         | Chick's       |                           |

RFW 21-21-036/F-03/94

REVIEWED BY/DATE:

*Chick's*<sup>1</sup>Date Removed is the date the standards are given to the Waste Disposal Unit for disposition.

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# HPLC STANDARDS PREPARATION LOGBOOK

## Preparation of Standard Dilutions (Single Component)

Logbook #: 4102

| COMPOUND            | STANDARD DILUTION I.D. | PARENT STANDARD I.D. | PARENT CONC. (w/units)                 | PARENT VOLUME (mL) | TOTAL VOLUME (mL) | SOLVENT                            | PREPARED STANDARD CONC. (w/units) | DATE/ANALYST         | REVIEWED BY/DATE | DATE REMOVED |
|---------------------|------------------------|----------------------|----------------------------------------|--------------------|-------------------|------------------------------------|-----------------------------------|----------------------|------------------|--------------|
| RDX                 | 41024001               | 41020304             | 1002 µg/mL                             | 27 mL              | 1 mL              | ACN                                | 27.05 µg/mL                       | 8/24/95<br>Gm        |                  | 11/16/96     |
| RDX                 | 41024002               | 41024001             | 27.05 µg/mL<br>1000 µg/mL<br>Gm 4/5/95 | 100 mL             | 1 mL              | ACN                                | 2.705 µg/mL                       | 8/24/95<br>Gm        |                  | 11/16/96     |
| Picric Acid         | 41024003               | 41021708             | 1010 µg/mL                             | 1 mL               | 10 mL             | ACN                                | 101 µg/mL                         | 8/24/95<br>Gm 9/5/95 |                  |              |
| Picric Acid         | 41024004               | 41020609             | 1000 µg/mL                             | 1 mL               | 10 mL             | ACN                                | 100 µg/mL                         | 8/24/95<br>Gm 9/5/95 |                  |              |
| 2-H-dibenzoylserine | 41024005               | 41020703             | 1000 µg/mL                             | 1250 mL            | 25 mL             | ACN                                | 50 µg/mL                          | 8/24/95<br>Gm        |                  |              |
| Triphenylene        | 41024006               | 41021907             | 1000 µg/mL                             | 1 mL               | 100 mL            | ACN                                | 5 µg/mL                           | 11/16/95<br>Gm       |                  |              |
| Triphenylene        | 41024007               | 41021908             | 500 µg/mL                              |                    |                   |                                    |                                   | 8/24/95<br>Gm        |                  |              |
| MOTOL OIL           | 41024008               | 41020103             |                                        |                    |                   |                                    |                                   |                      |                  |              |
| 1,2-DNB             | 41024009               | 41020710             | 1003 µg/mL                             | 0.810              | 10 mL             | ACN                                | 81.243 µg/mL                      | 8/24/95<br>Gm        |                  |              |
| p-Terphenyl         | 41024010               | 39850303             | 50 µg/mL                               | 0.0125 g           | 25 mL             | Acetone<br>(w/NaHCO <sub>3</sub> ) | 50 µg/mL                          | 12/20/95<br>Gm       |                  |              |
| 4-Nitrotoluene      | 41024011               | 41023909             | 100 mg/mL                              | 74.7 µL            | 1 mL              | ACN                                | 74.7 µg/mL                        | 12/20/95<br>Gm       |                  |              |

\*Date removed is the date standards are given to the Waste Disposal Unit for disposition.

RFW 21-21-036/C-03/94

**WESTON**

**Preparation Logs**



WESTON®

## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5655

Extract Date: 2/8/96 Extraction Batch #: 4611293 SDG File Y/N: N/A  
 Analyst: F. Higgins Test: 8330 Method: 2SCE Solvent: ACN AAPrep: I

| RFW # | Vol (mL)            | Mtx | pH | Initial Wt/Vol (g/mL) | Surr Mult | Spike Mult | Final Vol (mL) | Split Mult | GPC Y/N |
|-------|---------------------|-----|----|-----------------------|-----------|------------|----------------|------------|---------|
| 1     | Blank (770)         | W   |    | 1 (770)               | 1         |            | 10             | 2          | N       |
| 2     | Blank (770)         |     |    |                       |           | 1          |                |            |         |
| 3     | 4662963 - 004 (550) |     |    |                       |           |            |                |            |         |
| 4     | -009 (529)          |     |    |                       |           |            |                |            |         |
| 5     | -014 (200)          |     |    |                       |           |            |                |            |         |
| 6     | -019 (70)           |     |    |                       |           |            |                |            |         |
| 7     | -024 (30)           |     |    |                       |           |            |                |            |         |
| 8     |                     |     |    |                       |           |            |                |            |         |
| 9     |                     |     |    |                       |           |            |                |            |         |
| 10    |                     |     |    |                       |           |            |                |            |         |
| 11    |                     |     |    |                       |           |            |                |            |         |
| 12    |                     |     |    |                       |           |            |                |            |         |
| 13    |                     |     |    |                       |           |            |                |            |         |
| 14    |                     |     |    |                       |           |            |                |            |         |
| 15    |                     |     |    |                       |           |            |                |            |         |
| 16    |                     |     |    |                       |           |            |                |            |         |
| 17    |                     |     |    |                       |           |            |                |            |         |
| 18    |                     |     |    |                       |           |            |                |            |         |
| 19    |                     |     |    |                       |           |            |                |            |         |
| 20    |                     |     |    |                       |           |            |                |            |         |
| 21    |                     |     |    |                       |           |            |                |            |         |
| 22    |                     |     |    |                       |           |            |                |            |         |
| 23    |                     |     |    |                       |           |            |                |            |         |
| 24    |                     |     |    |                       |           |            |                |            |         |

Acid Fraction or Pest/PCB or LC (Date/Time/Initials)

Start time: 2/8End time: I

BN Fraction (Date/Time/Initials)

Start time: 2/8End time: I

## Extraction Information

(Date/Analyst)

Filtration: N/ABoildown: IBlowdown: IGPC Ready: IGPC Cleanup: IGPC #: IAfter GPC Boildown: IAfter GPC Blowdown: IAcid/Florisil/Alumina Cleanup: IPrep Sheet: 2/8/96GPC Lab ID #: N/AFlorisil Lot #: IFlorisil Lab ID #: I

\* For Surr/Spike Mult, refer to Table 1 / 2 / 3 (circle one)

COMMENTS: Sample brought to Volume (770mL) w/ DI H<sub>2</sub>O  
\* Bright Yellow Extractor previously used. Test Compounds  
\*\* Sample 014 produced results after 12-15 min follow - initial (25 min) Split with  
only added 2ml H<sub>2</sub>O on 22-25 min. 22 ml IV used for Cleanup from 25 min.

Surrogate: Blank 4611293 Spike: 125mL 4611293 Witness: IThis Page Reviewed By/Date: 2/8/96 Reviewed Against LIMS By/DATE: 2/8/96

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 02/08/96      Extraction Batch No: 96LLC015      Analyst: FK      Method: \*\*\*\*  
 Test: 0833      Cleanup Date:      Analyst:      Client: COE-HOT GAS

LIMS Report Date: 02/15/96

Solvent: ACN      Adsorbent:

| Sample No:            | Client Name          | pH | Initial Surr. | Spike | Final | Split | GPC | C/D    |
|-----------------------|----------------------|----|---------------|-------|-------|-------|-----|--------|
|                       | Client ID            |    | WT/VOL        | Mult. | Mult. | VOL   | Y/N | Solids |
|                       |                      |    |               |       |       |       |     | FACTOR |
| 9602L963- COE-HOT GAS |                      |    |               |       |       |       |     |        |
| 004 0                 | AFTOUT-EXPLSV-R2COMP | -7 | 1             | 1.0   | 10.0  | 2.0   | N   | 0.0    |
| 009 0                 | AFTOUT-EXPLSV-R3COND | 7  | 1             | 1.0   | 10.0  | 2.0   | N   | 0.0    |
| 014 0                 | AFTOUT-EXPLSV-BTCOND | 7  | 1             | 1.0   | 10.0  | 2.0   | N   | 0.0    |
| 019 0                 | AFTIN-EXP-R2-COND    | 7  | 1             | 1.0   | 10.0  | 2.0   | N   | 0.0    |
| 024 0                 | AFTIN-EXP-R3-COND    | 7  | 1             | 1.0   | 10.0  | 2.0   | N   | 0.0    |
| 96LLC015-MB1 0        | BLK                  | 7  | 1             | 1.0   | 10.0  | 2.0   | N   | 0.0    |
| 96LLC015-MB1 0S       | BLK                  | 7  | 1             | 1.0   | 10.0  | 2.0   | N   | 0.0    |

Comments:

Surrogate: 50 uL 41024009  
 Spike: 125 uL 461129B

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |

WESTON®

## LC - GC - GC/MS EXTRACTABLES

Logbook # 555

Extract Date: 2/8/96 Extraction Batch #: 96LC016 SDG File Y/N: \_\_\_\_\_  
 Analyst: Schell Test: 8330 Method: SONX Solvent: ACN AAPrep: \_\_\_\_\_

| RFW #                  | Mtrx      | pH | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>" | Spike<br>Mult<br>" | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|------------------------|-----------|----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|
| 1: <u>96071963-027</u> | <u>AW</u> |    |                             | <u>10</u>         |                    | <u>100</u>           | <u>2</u>      | <u>N</u>   |
| 2: <u>029</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             |               |            |
| 3: <u>031</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             |               |            |
| 4: <u>033</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             |               |            |
| 5: <u>035</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             |               |            |
| 6: <u>Blank</u>        | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             |               |            |
| 7: <u>BS</u>           | <u>↓</u>  |    |                             | <u>↓</u>          | <u>10</u>          | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 8:                     |           |    |                             |                   |                    |                      |               |            |
| 9:                     |           |    |                             |                   |                    |                      |               |            |
| 10:                    |           |    |                             |                   |                    |                      |               |            |
| 11:                    |           |    |                             |                   |                    |                      |               |            |
| 12:                    |           |    |                             |                   |                    |                      |               |            |
| 13:                    |           |    |                             |                   |                    |                      |               |            |
| 14:                    |           |    |                             |                   |                    |                      |               |            |
| 15:                    |           |    |                             |                   |                    |                      |               |            |
| 16:                    |           |    |                             |                   |                    |                      |               |            |
| 17:                    |           |    |                             |                   |                    |                      |               |            |
| 18:                    |           |    |                             |                   |                    |                      |               |            |
| 19:                    |           |    |                             |                   |                    |                      |               |            |
| 20:                    |           |    |                             |                   |                    |                      |               |            |
| 21:                    |           |    |                             |                   |                    |                      |               |            |
| 22:                    |           |    |                             |                   |                    |                      |               |            |
| 23:                    |           |    |                             |                   |                    |                      |               |            |
| 24:                    |           |    |                             |                   |                    |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

Extraction Information

(Date/Analyst)

Filtration: \_\_\_\_\_

Boildown: \_\_\_\_\_

Blowdown: \_\_\_\_\_

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Boildown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup: \_\_\_\_\_

Prep Sheet: 2/8/96

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
Table 1 / 2 / 3 (circle one)

COMMENTS:

KAD + Filter CompositesON 1430 2/8/96OFF 0830 2/9/96

Surrogate: 46.1L 4/16/2/16 120mg 100% Spike: 1.25 mL 461129B Witness: \_\_\_\_\_

This Page Reviewed By/Date: 2/16/96 2/8/96 Reviewed Against LIMS By/DATE: 2/8/96

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 02/08/96      Extraction Batch No: 96LLC016      Analyst: CS      Method: \*\*\*\*  
 Test: 0833      Cleanup Date:      Analyst:      Client: COE-HOT GAS  
 LIMS Report Date: 02/08/96      Solvent: ACN      Adsorbent:

| Sample No:      | Client Name         | Client ID | pH | Initial Surr. | Spike | Final Split | GPC | C/D    |
|-----------------|---------------------|-----------|----|---------------|-------|-------------|-----|--------|
|                 |                     |           |    | WT/VOL        | Mult. | Mult.       | Y/N | FACTOR |
| 9602L963-       | COE-HOT GAS         |           |    |               |       |             |     |        |
| 027 0           | AFTOUT-EXPLSV-R2-FX | 7         |    | 10.0          |       | 100         | 2   | N      |
| 029 0           | AFTOUT-EXPLSV-R3-FX | 7         |    | 10.0          |       | 100         | 2   | N      |
| 031 0           | AFTOUT-EXPLSV-BT-FX | 7         |    | 10.0          |       | 100         | 2   | N      |
| 033 0           | AFTIN-EXP-R2-FX     | 7         |    | 10.0          |       | 100         | 2   | N      |
| 035 0           | AFTIN-EXP-R3-FX     | 7         |    | 10.0          |       | 100         | 2   | N      |
| 96LLC016-MB1 0  |                     | 7         |    | 10.0          |       | 100         | 2   | N      |
| 96LLC016-MB1 0S |                     | 7         |    | 10.0          | 10.0  | 100         | 2   | N      |

Comments: XAD + FILTER COMPOSITES; 100 mL ACN; 18 Hour Sonc  
 Surrogate: 40 uL 41020710 1,2-DNB @ 1000 ug/mL  
 Spike: 1.25 mL 461129B

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |

*Handwritten signature*

Extract Date: 2/8/96 Extraction Batch #: 96LLC017 SDG File Y/N: -  
 Analyst: G. Heinricher Test: 08330 Method: KD Solvent: ACN AAPrep: 2/8/96

| RFW # | Mtrx         | pH   | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-------|--------------|------|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|
| 1     | 96022916-006 | Sdo. | 370                         | 1                 |                    | 10                   | 2             | W          |
| 2     | -020         |      | 210                         |                   |                    |                      |               |            |
| 3     | -023         |      | 240                         |                   |                    |                      |               |            |
| 4     | -025         |      | 220                         |                   |                    |                      |               |            |
| 5     | 96022963-026 |      | 240                         |                   |                    |                      |               |            |
| 6     | -028         |      | 210                         |                   |                    |                      |               |            |
| 7     | -030         |      | 180                         |                   |                    |                      |               |            |
| 8     | -032         |      | 235                         |                   |                    |                      |               |            |
| 9     | -034         |      | 325                         |                   |                    |                      |               |            |
| 10    | Blank        |      | 200                         |                   |                    |                      |               |            |
| 11    | Blank spike  |      | 200                         |                   | 1                  |                      |               |            |
| 12    |              |      |                             |                   |                    |                      |               |            |
| 13    |              |      |                             |                   |                    |                      |               |            |
| 14    |              |      |                             |                   |                    |                      |               |            |
| 15    |              |      |                             |                   |                    |                      |               |            |
| 16    |              |      |                             |                   |                    |                      |               |            |
| 17    |              |      |                             |                   |                    |                      |               |            |
| 18    |              |      |                             |                   |                    |                      |               |            |
| 19    |              |      |                             |                   |                    |                      |               |            |
| 20    |              |      |                             |                   |                    |                      |               |            |
| 21    |              |      |                             |                   |                    |                      |               |            |
| 22    |              |      |                             |                   |                    |                      |               |            |
| 23    |              |      |                             |                   |                    |                      |               |            |
| 24    |              |      |                             |                   |                    |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

## Extraction Information

(Date/Analyst)

Filtration: \_\_\_\_\_

Boildown: \_\_\_\_\_

Blowdown: \_\_\_\_\_

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Boildown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup: \_\_\_\_\_

Prep Sheet: 2/9/96 Gm

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
Table 1 / 2 / 3 (circle one)

COMMENTS: DCM/ACETONE SD:SD used for B + BS

All initial volumes to be logged in as 1 for total vol.

Water in all samples requiring Sodium Sulfate filtering

Surrogate: SDul 410240 1,2,4-DNB Spike: 461129 B 125 uL Witness: \_\_\_\_\_

This Page Reviewed By/Date: 2/12/96 Reviewed Against LIMS By/DATE: 2/12/96

SAMPLE EXTRACTION RECORD

233

Sheet no.: 1

Extract. Date: 02/08/96 Extraction Batch No: 96LLC017 Analyst: GL Method: \*\*\*\*

Test: 0833 Cleanup Date: Analyst: Client: COE-HOT GAS

LIMS Report Date: 02/09/96 Solvent: DCM/ACETONE TO ACN Adsorbent:

| Sample No:            | Client Name          | pH | Initial Surr. WT/VOL | Spike Mult. | Final VOL | Split Mult. | GPC % | C/D  |
|-----------------------|----------------------|----|----------------------|-------------|-----------|-------------|-------|------|
| 9602L916- COE-HOT GAS |                      |    |                      |             |           |             |       |      |
| 006 0                 | IN/OUT-EXP/SV-SB-ACE | 7  | 1                    | 1.0         | 10        | 2.0         | N 0.0 | 20.0 |
| 020 0                 | AFTOUT-EXP/SV-R1-FB  | 7  | 1                    | 1.0         | 10        | 2.0         | N 0.0 | 20.0 |
| 023 0                 | AFTIN-EXP-R1-FB      | 7  | 1                    | 1.0         | 10        | 2.0         | N     | 20.0 |
| 025 0                 | AFTIN-EXP-RIMS-FB    | 7  | 1                    | 1.0         | 10        | 2.0         | N     | 20.0 |
| 9602L963- COE-HOT GAS |                      |    |                      |             |           |             |       |      |
| 026 0                 | AFTOUT-EXPLSV-R2-FB  | 7  | 1                    | 1.0         | 10        | 2.0         | N     | 20.0 |
| 028 0                 | AFTOUT-EXPLSV-R3-FB  | 7  | 1                    | 1.0         | 10        | 2.0         | N     | 20.0 |
| 030 0                 | AFTOUT-EXPLSV-BT-FB  | 7  | 1                    | 1.0         | 10        | 2.0         | N     | 20.0 |
| 032 0                 | AFTIN-EXP-R2-FB      | 7  | 1                    | 1.0         | 10        | 2.0         | N 0.0 | 20.0 |
| 034 0                 | AFTIN-EXP-R3-FB      | 7  | 1                    | 1.0         | 10        | 2.0         | N 0.0 | 20.0 |
| 96LLC017-MB1 0        | BLK                  | 7  | 1                    | 1.0         | 10        | 2.0         | N     | 20.0 |
| 96LLC017-MB1 0S       | BLK                  | 7  | 1                    | 1.0         | 1.0 10    | 2.0         | N     | 20.0 |

Comments: ALL REQUIRED FILTRATION THROUGH SODIUM SULFATE  
 Surrogate: 50UL 41024101 1,2-DNB  
 Spike: 125UL 461129B

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
| NA                   |                 |           |             |           |                     |

Gr 2/9/96

**WESTON**

**Other/Miscellaneous**

**WESTON**

**End of Data Package**



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**SEMIVOLATILE ORGANICS**

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Roy F. Weston, Inc. - Lionville Laboratory  
BNA ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/02/96

RFW LOT # :9602L916

| CLIENT ID            | RFW # | MTX | PREP #      | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|-------|-----|-------------|------------|-----------|----------|
| AFTOUT-EXP/SV-R1-CND | 004   | AI  | 96LE0209    | 01/31/96   | 02/09/96  | 02/11/96 |
| AFTOUT-EXP/SV-R1-CND | 004   | A1  | AI 96LE0209 | 01/31/96   | 02/09/96  | 02/15/96 |
| IN/OUT-EXP/SV-SB-ACE | 006   | AI  | 96LE0209    | 01/31/96   | 02/09/96  | 02/12/96 |
| IN/OUT-EXP/SV-SB-CND | 009   | AI  | 96LE0209    | 01/31/96   | 02/09/96  | 02/11/96 |
| AFTIN-EXP-R1-CND     | 013   | AI  | 96LE0236    | 01/31/96   | 02/14/96  | 02/17/96 |
| AFTIN-EXP-R1MS-CND   | 018   | AI  | 96LE0236    | 02/01/96   | 02/14/96  | 02/17/96 |
| AFTOUT-EXP/SV-R1-FB  | 020   | AI  | 96LE0209    | 01/31/96   | 02/09/96  | 02/11/96 |
| AFTOUT-EXP/SV-R1-FX  | 021   | AI  | 96LE0209    | 01/31/96   | 02/09/96  | 02/11/96 |
| AFTOUT-EXP/SV-R1-FX  | 021   | A1  | AI 96LE0209 | 01/31/96   | 02/09/96  | 02/15/96 |
| IN/OUT-EXP/SV-SB-FX  | 022   | AI  | 96LE0209    | 01/31/96   | 02/09/96  | 02/11/96 |
| AFTIN-EXP-R1-FB      | 023   | AI  | 96LE0236    | 01/31/96   | 02/14/96  | 02/17/96 |
| AFTIN-EXP-R1-FX      | 024   | AI  | 96LE0236    | 01/31/96   | 02/14/96  | 02/17/96 |
| AFTIN-EXP-R1MS-FB    | 025   | AI  | 96LE0236    | 02/01/96   | 02/14/96  | 02/17/96 |
| AFTIN-EXP-R1MS-FX    | 026   | AI  | 96LE0236    | 02/01/96   | 02/14/96  | 02/17/96 |

LAB QC:

|        |         |    |          |     |          |          |
|--------|---------|----|----------|-----|----------|----------|
| SBLKSO | MB1     | AI | 96LE0209 | N/A | 02/09/96 | 02/11/96 |
| SBLKSO | MB1 BS  | AI | 96LE0209 | N/A | 02/09/96 | 02/11/96 |
| SBLKSO | MB1 BSD | AI | 96LE0209 | N/A | 02/09/96 | 02/11/96 |
| SBLKSX | MB1     | AI | 96LE0236 | N/A | 02/14/96 | 02/17/96 |
| SBLKSX | MB1 BS  | AI | 96LE0236 | N/A | 02/14/96 | 02/17/96 |
| SBLKSX | MB1 BSD | AI | 96LE0236 | N/A | 02/14/96 | 02/17/96 |

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| 2. Tentatively Identified Compounds (TICs) (Form 1E)         |        |
| 3. Raw Data                                                  |        |
| a. Reconstructed Ion Chromatogram(s)                         |        |
| b. Quantitation Report(s)                                    |        |
| c. HSL Mass Spectra                                          |        |
| d. GC/MS Library Search for TIC                              |        |
| C. Method Blank Spike Data/Matrix Spike Data (if applicable) |        |
| 1. Tabulated Results (Form 1)                                |        |
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## **CHAIN OF CUSTODY**

RFW  
Explosives - AFT OUTLET  
Custody Transfer Record/Lab Work Request

Client: COE - HOT GAS  
Est. Final Proj. Sampling Date: 02/28/10-02-02-1200  
Work Order #: 02281-02-02-1200  
Project Contact/Phone #: 509-090-1111 X7201  
AD Project Manager: [Signature]  
QC: 500 [Signature]  
Date Rec'd: 2/2/10  
Account #: COE HOT GAS

| MATRIX CODES:       | Lab ID | Client ID/Description           | Matrix QC Chosen (✓) |     | Matrix | Date Collected | Time Collected | WESTON Analyticals Use Only |         |       |  |
|---------------------|--------|---------------------------------|----------------------|-----|--------|----------------|----------------|-----------------------------|---------|-------|--|
|                     |        |                                 | MS                   | MSD |        |                |                | VOA                         | ORGANIC | INORG |  |
| S - Soil            |        |                                 |                      |     |        |                |                |                             |         |       |  |
| SE - Sediment       |        |                                 |                      |     |        |                |                |                             |         |       |  |
| SL - Sludge         |        |                                 |                      |     |        |                |                |                             |         |       |  |
| W - Water           |        |                                 |                      |     |        |                |                |                             |         |       |  |
| O - Oil             |        |                                 |                      |     |        |                |                |                             |         |       |  |
| DS - Drum Solids    |        |                                 |                      |     |        |                |                |                             |         |       |  |
| DL - Drum Liquids   |        |                                 |                      |     |        |                |                |                             |         |       |  |
| L - EPTCLP Leachate |        |                                 |                      |     |        |                |                |                             |         |       |  |
| WI - Wipe           |        |                                 |                      |     |        |                |                |                             |         |       |  |
| X - Other           |        |                                 |                      |     |        |                |                |                             |         |       |  |
| F - Fish            |        |                                 |                      |     |        |                |                |                             |         |       |  |
| 006                 | 001    | COE-H6-AFTOUT-EXP/SV-RI-FH-SAIR | 1/31/96              |     |        |                |                |                             |         |       |  |
| 007                 | 002    | COE-H6-AFTOUT-EXP/SV-RI-FH      |                      |     |        |                |                |                             |         |       |  |
| 008                 | 003    | COE-H6-AFTOUT-EXP/SV-RI-XAD     |                      |     |        |                |                |                             |         |       |  |
| 009                 | 004    | COE-H6-AFTOUT-EXP/SV-RI-COND    |                      |     |        |                |                |                             |         |       |  |
| 010                 | 005    | COE-H6-AFTOUT-EXP/SV-RI-BH-SAIR |                      |     |        |                |                |                             |         |       |  |
| 011                 | 006    | COE-H6-IN/OUT-EXP/SV-SD-AE/PAH  | 1/31/96              |     |        |                |                |                             |         |       |  |
| 012                 | 007    | COE-H6-IN/OUT-EXP/SV-SD-FILTR   |                      |     |        |                |                |                             |         |       |  |
| 013                 | 008    | COE-H6-IN/OUT-EXP/SV-SD-NAD     |                      |     |        |                |                |                             |         |       |  |
| 014                 | 009    | COE-H6-IN/OUT-EXP/SV-SD-HD      |                      |     |        |                |                |                             |         |       |  |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:  
\* RDX, HMX, Tetra, 1,2,4-DNT, 2,6-DNT, ND, 1,3-DNB, 1,3,5-TNB, 2,4,6-TNT

DATE/REVISIONS:  
1. Analyze 1 run of  
2. per EXP/SV for  
3. lower carbon number  
4. Semi-volatiles only  
5. EPA 8015. Select run  
6. with highest explosives

WESTON Analyticals Use Only

Samples were:  
1) Shipped or Hand Delivered Package Y or N  
2) Arrived in Good Condition Y or N  
3) Received in Good Condition Y or N  
4) Labels Indicate Properly Preserved Sample Y or N  
5) Received Within Holding Times Y or N

COC Tape was:  
1) Present on Outer Package Y or N  
2) Unbroken on Outer Package Y or N  
3) Present on Sample Y or N  
4) Unbroken on Sample Y or N  
5) COC Record Present Upon Sample Rec'd Y or N

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:



## Custody Transfer Record/Lab Work Request

Client COEHAT & HS

Est. Final Proj. Sampling Date \_\_\_\_\_

Work Order # \_\_\_\_\_

Project Contact/Phone # Joe Papageorgis

AD Project Manager \_\_\_\_\_

QC Del TAT Date Due \_\_\_\_\_

Date Rec'd \_\_\_\_\_ Account # \_\_\_\_\_

Refrigerator # \_\_\_\_\_

#/Type Container \_\_\_\_\_

Volume \_\_\_\_\_

Preservatives \_\_\_\_\_

ANALYSES REQUESTED \_\_\_\_\_

VOA \_\_\_\_\_ BNA \_\_\_\_\_ PCB \_\_\_\_\_ Herb \_\_\_\_\_

INORG \_\_\_\_\_ Metal \_\_\_\_\_

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) |     | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only |  |  |  |  |  |  |  |  |  |
|---------------|--------|-----------------------|----------------------|-----|--------|----------------|----------------|---------------------------|--|--|--|--|--|--|--|--|--|
|               |        |                       | MS                   | MSD |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| S - Soil      | 020    | AETOUT-EXP-SV-R1-FB   |                      |     | Air    | 1/14/16        |                |                           |  |  |  |  |  |  |  |  |  |
| SE - Sediment | 021    | AETOUT-EXP-SV-R1-FX   |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| SO - Solid    | 022    | INJOUT-EXP-SV-SB-FX   |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| SL - Sludge   | 023    | AETIN-EXP-R1-FB       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| W - Water     | 024    | AETIN-EXP-R1-FX       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| O - Oil       | 025    | AETIN-EXP-RIMS-FB     |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| A - Air       | 026    | AETIN-EXP-RIMS-FX     |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| DS - Drum     |        |                       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| DL - Drum     |        |                       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| Liquids       |        |                       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| EP/TCLP       |        |                       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| Leachate      |        |                       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| W - Wipe      |        |                       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| X - Other     |        |                       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |
| F - Fish      |        |                       |                      |     |        |                |                |                           |  |  |  |  |  |  |  |  |  |

## FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

## Special Instructions:

FB = FHS + BHS Composite

FX = FILT + XAD Composite

2/20/16 corrected decontamination

#0251026 per Smith 9/6/2020

## DATE/REVISIONS:

1. 2/19/16 1. 625H added to 013, 018, 023, 024, 025
2. 2/19/16 2. date per 9/6/2020
3. 2/19/16 3. all matrix's on all samples
4. 2/19/16 4. core file per son 9/6/2020
5. 2/19/16 5. 020 added to 004, 013, 020, 021, 023
6. 2/24/16 6. 024 per 9/6/2020

| Relinquished by    | Received by        | Date    | Time |
|--------------------|--------------------|---------|------|
| <u>[Signature]</u> | <u>[Signature]</u> | 2/24/16 | 1:00 |

| Relinquished by | Received by | Date | Time |
|-----------------|-------------|------|------|
|                 |             |      |      |

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

## WESTON Analytics Use Only

Samples were:

1) Shipped \_\_\_\_\_ or

Hand Delivered \_\_\_\_\_

Airbill # \_\_\_\_\_

2) Ambient or Chilled \_\_\_\_\_

3) Refrigerated \_\_\_\_\_

Condition \_\_\_\_\_ or \_\_\_\_\_

4) Labels Indicate \_\_\_\_\_

Properly Preserved \_\_\_\_\_

Sample \_\_\_\_\_ Y or N

COC Record Present \_\_\_\_\_

5) Received Within \_\_\_\_\_

Holding Times \_\_\_\_\_ Y or N

COC Tape was:

1) Present on Outer

Package Y or N

2) Unbroken on Outer

Package Y or N

3) Present on Sample

Condition Y or N

4) Unbroken on

Sample Y or N

COC Record Present

Within Sample Rec'd

Y or N

## **DATA SUMMARY**



# Roy F. Weston, Inc. - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 02/21/96 16:11

RFW Batch Number: 9602L916

Client: COE-HOT GAS

Work Order: 02281012012 Page: 1a

Cust ID: AFTOUT-EXP/S AFTOUT-EXP/S IN/OUT-EXP/S IN/OUT-EXP/S AFTIN-EXP-R1 AFTIN-EXP-R1 MS-CND

Sample Information  
 RFW#: 004  
 Matrix: AIR  
 D.F.: 2.50  
 Units: total ug

V-R1-CND 004 RE 004 RE 006 009 013 018  
 AIR AIR AIR AIR AIR AIR  
 2.50 2.50 2.50 2.50 62.5 2.50  
 total ug total ug total ug total ug total ug total ug

| Surrogate | Nitrobenzene-d5              | 68  | % | 48  | % | 79  | % | 55  | % | 38   | % | 62  | % |
|-----------|------------------------------|-----|---|-----|---|-----|---|-----|---|------|---|-----|---|
| Recovery  | 2-Fluorobiphenyl             | 66  | % | 54  | % | 74  | % | 58  | % | 69   | % | 75  | % |
|           | p-Terphenyl-d14              | 110 | % | 93  | % | 96  | % | 88  | % | 77   | % | 82  | % |
|           | Phenol-d5                    | 57  | % | 41  | % | 70  | % | 46  | % | 41   | % | 64  | % |
|           | 2-Fluorophenol               | 78  | % | 43  | % | 98  | % | 63  | % | 86   | % | 109 | % |
|           | 2,4,6-Tribromophenol         | 86  | % | 59  | % | 79  | % | 75  | % | 60   | % | 68  | % |
|           | Phenol                       | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | bis(2-Chloroethyl) ether     | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 2-Chlorophenol               | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 1,3-Dichlorobenzene          | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 1,4-Dichlorobenzene          | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | Benzyl alcohol               | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 1,2-Dichlorobenzene          | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 2-Methylphenol               | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | bis(2-Chloroisopropyl) ether | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 4-Methylphenol               | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | N-Nitroso-Di-n-propylamine   | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | Hexachloroethane             | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | Nitrobenzene                 | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | Isophorone                   | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 2-Nitrophenol                | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 2,4-Dimethylphenol           | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | Benzoic acid                 | 120 | U | 120 | U | 120 | U | 120 | U | 3100 | U | 120 | U |
|           | bis(2-Chloroethoxy)methane   | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 2,4-Dichlorophenol           | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 1,2,4-Trichlorobenzene       | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | Naphthalene                  | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 4-Chloroaniline              | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | Hexachlorobutadiene          | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 4-Chloro-3-methylphenol      | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | 2-Methylnaphthalene          | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |
|           | Hexachlorocyclopentadiene    | 25  | U | 25  | U | 25  | U | 25  | U | 620  | U | 25  | U |

\*= Outside of EPA CLP QC limits.

|                            |     |    |     |    |     |   |     |   |      |   |     |   |
|----------------------------|-----|----|-----|----|-----|---|-----|---|------|---|-----|---|
| 2,4,6-Trichlorophenol      | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| 2,4,5-Trichlorophenol      | 120 | U  | 120 | U  | 120 | U | 120 | U | 3100 | U | 120 | U |
| 2-Chloronaphthalene        | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| 2-Nitroaniline             | 120 | U  | 120 | U  | 120 | U | 120 | U | 3100 | U | 120 | U |
| Dimethylphthalate          | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Acenaphthylene             | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| 2,6-Dinitrotoluene         | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| 3-Nitroaniline             | 120 | U  | 120 | U  | 120 | U | 120 | U | 3100 | U | 120 | U |
| Acenaphthene               | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| 2,4-Dinitrophenol          | 120 | U  | 120 | U  | 120 | U | 120 | U | 3100 | U | 120 | U |
| 4-Nitrophenol              | 120 | U  | 120 | U  | 120 | U | 120 | U | 3100 | U | 120 | U |
| Dibenzofuran               | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| 2,4-Dinitrotoluene         | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Diethylphthalate           | 8   | J  | 8   | J  | 25  | U | 25  | U | 620  | U | 25  | U |
| 4-Chlorophenyl-phenylether | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Fluorene                   | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| 4-Nitroaniline             | 120 | U  | 120 | U  | 120 | U | 120 | U | 3100 | U | 120 | U |
| 4,6-Dinitro-2-methylphenol | 120 | U  | 120 | U  | 120 | U | 120 | U | 3100 | U | 120 | U |
| N-Nitrosodiphenylamine (1) | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| 4-Bromophenyl-phenylether  | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Hexachlorobenzene          | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Pentachlorophenol          | 3   | JB | 120 | U  | 120 | U | 120 | U | 3100 | U | 120 | U |
| Phenanthrene               | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Anthracene                 | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Di-n-Butylphthalate        | 5   | J  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Fluoranthene               | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Pyrene                     | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Butylbenzylphthalate       | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| 3,3'-Dichlorobenzidine     | 50  | U  | 50  | U  | 50  | U | 50  | U | 1200 | U | 50  | U |
| Benzo(a)anthracene         | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Chrysene                   | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| bis(2-Ethylhexyl)phthalate | 14  | JB | 8   | JB | 25  | U | 25  | U | 620  | U | 4   | J |
| Di-n-Octyl phthalate       | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Benzo(b)fluoranthene       | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Benzo(k)fluoranthene       | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Benzo(a)pyrene             | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Indeno(1,2,3-cd)pyrene     | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Dibenzo(a,h)anthracene     | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Benzo(g,h,i)perylene       | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |
| Carbazole                  | 25  | U  | 25  | U  | 25  | U | 25  | U | 620  | U | 25  | U |

(1) - Cannot be separated from Diphenylamine.    \* = Outside of EPA CLP QC limits.

# Roy F. Weston, Inc. - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 02/21/96 16:11

RFW Batch Number: 9602L916

Client: COE-HOT GAS

Work Order: 02281012012 Page: 2a

Cust ID: AFTOUT-EXP/S AFTOUT-EXP/S AFTOUT-EXP/S IN/OUT-EXP/S AFTIN-EXP-R1 AFTIN-EXP-R1  
 V-R1-FB 020 AIR 2.50 total ug V-R1-FX 021 AIR 25.0 total ug V-R1-FX 022 AIR 25.0 total ug V-R1-FX 023 AIR 62.5 total ug V-R1-FX 024 AIR 25.0 total ug

Sample Information  
 RFW#: 020  
 Matrix: AIR  
 D.F.: 2.50  
 Units: total ug

| Surrogate | Nitrobenzene-d5             | 47  | % | 68   | % | 43   | % | 71   | % | 40   | % | 56   | % |
|-----------|-----------------------------|-----|---|------|---|------|---|------|---|------|---|------|---|
| Recovery  | 2-Fluorobiphenyl            | 52  | % | 61   | % | 42   | % | 72   | % | 82   | % | 71   | % |
|           | p-Terphenyl-d14             | 83  | % | 85   | % | 87   | % | 84   | % | 76   | % | 79   | % |
|           | Phenol-d5                   | 40  | % | 55   | % | 33   | % | 48   | % | 55   | % | 60   | % |
|           | 2-Fluorophenol              | 53  | % | 74   | % | 33   | % | 69   | % | 104  | % | 99   | % |
|           | 2,4,6-Tribromophenol        | 75  | % | 83   | % | 56   | % | 61   | % | 62   | % | 67   | % |
|           | Phenol                      | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | bis(2-Chloroethyl)ether     | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 2-Chlorophenol              | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 1,3-Dichlorobenzene         | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 1,4-Dichlorobenzene         | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | Benzyl alcohol              | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 1,2-Dichlorobenzene         | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 2-Methylphenol              | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | bis(2-Chloroisopropyl)ether | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 4-Methylphenol              | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | N-Nitroso-Di-n-propylamine  | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | Hexachloroethane            | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | Nitrobenzene                | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | Isophorone                  | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 2-Nitrophenol               | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 2,4-Dimethylphenol          | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | Benzoic acid                | 120 | U | 1200 | U | 1200 | U | 1200 | U | 3100 | U | 1200 | U |
|           | bis(2-Chloroethoxy)methane  | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 2,4-Dichlorophenol          | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 1,2,4-Trichlorobenzene      | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | Naphthalene                 | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 4-Chloroaniline             | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | Hexachlorobutadiene         | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 4-Chloro-3-methylphenol     | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | 2-Methylnaphthalene         | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |
|           | Hexachlorocyclopentadiene   | 25  | U | 250  | U | 250  | U | 250  | U | 620  | U | 250  | U |

\*= Outside of EPA CLP QC limits.

Cust ID: AFTOUT-EXP/S AFTOUT-EXP/S AFTOUT-EXP/S IN/OUT-EXP/S AFTIN-EXP-R1 AFTIN-EXP-R1  
 V-R1-FB V-R1-FX V-R1-FX V-SB-FX -FB -FX 024

RFW#:

|                            |      |   |      |   |      |   |      |   |      |   |
|----------------------------|------|---|------|---|------|---|------|---|------|---|
| 2,4,6-Trichlorophenol      | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 2,4,5-Trichlorophenol      | 120  | U | 1200 | U | 1200 | U | 3100 | U | 1200 | U |
| 2-Chloronaphthalene        | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 2-Nitroaniline             | 120  | U | 1200 | U | 1200 | U | 3100 | U | 1200 | U |
| Dimethylphthalate          | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Acenaphthylene             | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 2,6-Dinitrotoluene         | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 3-Nitroaniline             | 120  | U | 1200 | U | 1200 | U | 3100 | U | 1200 | U |
| Acenaphthene               | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 2,4-Dinitrophenol          | 120  | U | 1200 | U | 1200 | U | 3100 | U | 1200 | U |
| 4-Nitrophenol              | 120  | U | 1200 | U | 1200 | U | 3100 | U | 1200 | U |
| Dibenzofuran               | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 2,4-Dinitrotoluene         | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Diethylphthalate           | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 4-Chlorophenyl-phenylether | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Fluorene                   | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 4-Nitroaniline             | 120  | U | 1200 | U | 1200 | U | 3100 | U | 1200 | U |
| 4,6-Dinitro-2-methylphenol | 120  | U | 1200 | U | 1200 | U | 3100 | U | 1200 | U |
| N-Nitrosodiphenylamine (1) | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 4-Bromophenyl-phenylether  | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Hexachlorobenzene          | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Pentachlorophenol          | 120  | U | 1200 | U | 1200 | U | 3100 | U | 1200 | U |
| Phenanthrene               | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Anthracene                 | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Di-n-Butylphthalate        | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Fluoranthene               | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Pyrene                     | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Butylbenzylphthalate       | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| 3,3'-Dichlorobenzidine     | 50   | U | 500  | U | 500  | U | 1200 | U | 500  | U |
| Benzo(a)anthracene         | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Chrysene                   | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| bis(2-Ethylhexyl)phthalate | 9 JB | U | 250  | U | 250  | U | 620  | U | 39   | J |
| Di-n-Octyl phthalate       | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Benzo(b)fluoranthene       | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Benzo(k)fluoranthene       | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Benzo(a)pyrene             | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Indeno(1,2,3-cd)pyrene     | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Dibenzo(a,h)anthracene     | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Benzo(g,h,i)perylene       | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |
| Carbazole                  | 25   | U | 250  | U | 250  | U | 620  | U | 250  | U |

(1) - Cannot be separated from Diphenylamine. \* = Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory  
Semi-volatiles by GC/MS, HSL List  
Client: COE-HOT GAS

Report Date: 02/21/96 16:14  
Work Order: 02281012012 Page: 3a

RFW Batch Number: 9602L916

Cust ID: AFTIN-EXP-R1 AFTIN-EXP-R1 SBLKSO SBLKSO BS SBLKSO BSD SBLKSOX

MS-FB MS-FX

Sample Information  
RFW#: 025 026  
Matrix: AIR AIR  
D.F.: 2.50 2.50  
Units: total ug total ug total ug total ug

96LE0209-MB1 96LE0209-MB1 96LE0209-MB1 96LE0236-MB1  
AIR AIR AIR AIR  
2.50 2.50 2.50 2.50  
total ug total ug total ug total ug

| Surrogate | Nitrobenzene-d5              | 62  | % | 56   | % | 74   | % | 72   | % | 66   | % | 53  | % |
|-----------|------------------------------|-----|---|------|---|------|---|------|---|------|---|-----|---|
| Recovery  | 2-Fluorobiphenyl             | 72  | % | 67   | % | 75   | % | 82   | % | 77   | % | 67  | % |
|           | p-Terphenyl-d14              | 88  | % | 83   | % | 81   | % | 84   | % | 75   | % | 72  | % |
|           | Phenol-d5                    | 60  | % | 55   | % | 19 * | % | 19 * | % | 17 * | % | 48  | % |
|           | 2-Fluorophenol               | 97  | % | 98   | % | 46   | % | 36   | % | 31   | % | 79  | % |
|           | 2,4,6-Tribromophenol         | 61  | % | 65   | % | 68   | % | 91   | % | 84   | % | 56  | % |
|           | Phenol                       | 25  | U | 250  | U | 25   | U | 18 * | % | 17 * | % | 25  | U |
|           | bis(2-Chloroethyl) ether     | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 2-Chlorophenol               | 25  | U | 250  | U | 25   | U | 65   | % | 59   | % | 25  | U |
|           | 1,3-Dichlorobenzene          | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 1,4-Dichlorobenzene          | 25  | U | 250  | U | 25   | U | 65   | % | 58   | % | 25  | U |
|           | Benzyl alcohol               | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 1,2-Dichlorobenzene          | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 2-Methylphenol               | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | bis(2-Chloroisopropyl) ether | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 4-Methylphenol               | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | N-Nitroso-Di-n-propylamine   | 25  | U | 250  | U | 25   | U | 77   | % | 70   | % | 25  | U |
|           | Hexachloroethane             | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | Nitrobenzene                 | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | Isophorone                   | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 2-Nitrophenol                | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 2,4-Dimethylphenol           | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | Benzoic acid                 | 120 | U | 1200 | U | 120  | U | 120  | U | 120  | U | 120 | U |
|           | bis(2-Chloroethoxy)methane   | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 2,4-Dichlorophenol           | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 1,2,4-Trichlorobenzene       | 25  | U | 250  | U | 25   | U | 73   | % | 67   | % | 25  | U |
|           | Naphthalene                  | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 4-Chloroaniline              | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | Hexachlorobutadiene          | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 4-Chloro-3-methylphenol      | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |
|           | 2-Methylnaphthalene          | 25  | U | 250  | U | 25   | U | 75   | % | 68   | % | 25  | U |
|           | Hexachlorocyclopentadiene    | 25  | U | 250  | U | 25   | U | 25   | U | 25   | U | 25  | U |

\*= Outside of EPA CLP QC limits.



Roy F. Weston, Inc. - Lionville Laboratory  
Semivolatiles by GC/MS, HSL List

Report Date: 02/21/96 16:11

Work Order: 02281012012 Page: 4a

RFW Batch Number: 9602L916

Client: COE-HOT GAS

Cust ID: SBLKX BS SBLKX BSD

Sample RFW#: 96LE0236-MB1 96LE0236-MB1

Information Matrix: AIR AIR

D.F.: 2.50 2.50

Units: total ug total ug

| Surrogate | Nitrobenzene-d5              | 71  | % | 70  | % |
|-----------|------------------------------|-----|---|-----|---|
| Recovery  | 2-Fluorobiphenyl             | 89  | % | 89  | % |
|           | p-Terphenyl-d14              | 94  | % | 89  | % |
|           | Phenol-d5                    | 62  | % | 63  | % |
|           | 2-Fluorophenol               | 102 | % | 105 | % |
|           | 2,4,6-Tribromophenol         | 74  | % | 71  | % |
|           |                              | 51  | % | 51  | % |
|           | bis(2-Chloroethyl) ether     | 25  | U | 25  | U |
|           | 2-Chlorophenol               | 66  | % | 65  | % |
|           | 1,3-Dichlorobenzene          | 25  | U | 25  | U |
|           | 1,4-Dichlorobenzene          | 55  | % | 57  | % |
|           | Benzyl alcohol               | 25  | U | 25  | U |
|           | 1,2-Dichlorobenzene          | 25  | U | 25  | U |
|           | 2-Methylphenol               | 25  | U | 25  | U |
|           | bis(2-Chloroisopropyl) ether | 25  | U | 25  | U |
|           | 4-Methylphenol               | 63  | % | 62  | % |
|           | N-Nitroso-Di-n-propylamine   | 25  | U | 25  | U |
|           | Hexachloroethane             | 25  | U | 25  | U |
|           | Nitrobenzene                 | 25  | U | 25  | U |
|           | Isophorone                   | 25  | U | 25  | U |
|           | 2-Nitrophenol                | 25  | U | 25  | U |
|           | 2,4-Dimethylphenol           | 25  | U | 25  | U |
|           | Benzoic acid                 | 120 | U | 120 | U |
|           | bis(2-Chloroethoxy) methane  | 25  | U | 25  | U |
|           | 2,4-Dichlorophenol           | 25  | U | 25  | U |
|           | 1,2,4-Trichlorobenzene       | 65  | % | 66  | % |
|           | Naphthalene                  | 25  | U | 25  | U |
|           | 4-Chloroaniline              | 25  | U | 25  | U |
|           | Hexachlorobutadiene          | 25  | U | 25  | U |
|           | 4-Chloro-3-methylphenol      | 77  | % | 75  | % |
|           | 2-Methylnaphthalene          | 25  | U | 25  | U |
|           | Hexachlorocyclopentadiene    | 25  | U | 25  | U |

\*= Outside of EPA CLP QC limits.

014

Cust ID: SBLKX BS

SBLKX BSD

RFW#: 96LE02336-MB1 96LE02336-MB1

|                             |       |       |
|-----------------------------|-------|-------|
| 2,4,6-Trichlorophenol       | 25 U  | 25 U  |
| 2,4,5-Trichlorophenol       | 120 U | 120 U |
| 2-Chloronaphthalene         | 25 U  | 25 U  |
| 2-Nitroaniline              | 120 U | 120 U |
| Dimethylphthalate           | 25 U  | 25 U  |
| Acenaphthylene              | 25 U  | 25 U  |
| 2,6-Dinitrotoluene          | 25 U  | 25 U  |
| 3-Nitroaniline              | 120 U | 120 U |
| Acenaphthene                | 76 %  | 75 %  |
| 2,4-Dinitrophenol           | 120 U | 120 U |
| 4-Nitrophenol               | 54 %  | 58 %  |
| Dibenzofuran                | 25 U  | 25 U  |
| 2,4-Dinitrotoluene          | 77 %  | 76 %  |
| Diethylphthalate            | 25 U  | 25 U  |
| 4-Chlorophenyl-phenylether  | 25 U  | 25 U  |
| Fluorene                    | 25 U  | 25 U  |
| 4-Nitroaniline              | 120 U | 120 U |
| 4,6-Dinitro-2-methylphenol  | 120 U | 120 U |
| N-Nitrosodiphenylamine (1)  | 25 U  | 25 U  |
| 4-Bromophenyl-phenylether   | 25 U  | 25 U  |
| Hexachlorobenzene           | 25 U  | 25 U  |
| Pentachlorophenol           | 83 %  | 82 %  |
| Phenanthrene                | 25 U  | 25 U  |
| Anthracene                  | 25 U  | 25 U  |
| Di-n-Butylphthalate         | 25 U  | 25 U  |
| Fluoranthene                | 25 U  | 25 U  |
| Pyrene                      | 81 %  | 76 %  |
| Butylbenzylphthalate        | 25 U  | 25 U  |
| 3,3'-Dichlorobenzidine      | 50 U  | 50 U  |
| Benzo (a) anthracene        | 25 U  | 25 U  |
| Chrysene                    | 25 U  | 25 U  |
| bis(2-Ethylhexyl) phthalate | 25 U  | 25 U  |
| Di-n-Octyl phthalate        | 25 U  | 25 U  |
| Benzo (b) fluoranthene      | 25 U  | 25 U  |
| Benzo (k) fluoranthene      | 25 U  | 25 U  |
| Benzo (a) pyrene            | 25 U  | 25 U  |
| Indeno (1,2,3-cd) pyrene    | 25 U  | 25 U  |
| Dibenzo (a,h) anthracene    | 25 U  | 25 U  |
| Benzo (g,h,i) perylene      | 25 U  | 25 U  |
| Carbazole                   | 25 U  | 25 U  |

(1) Cannot be separated from Diphenylamine. \*= Outside of EPA CLP QC limits.



## **CASE NARRATIVE**



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## LIONVILLE LABORATORY ANALYTICAL REPORT

Client : COE-HOT GAS  
RFW# : 9602L916

W.O. #: 02281-012-012-1200-00  
Date Received: 02 February 1996

### SEMIVOLATILE

The set of samples consisted of four (4) air samples collected on 31 January 1996 and 01 February 1996. Each sampling train consisted of three fractions: condensate, solid (filter/XAD), and solvent; each fraction was analyzed and reported individually.

These samples were prepared for Method 8330 analyses on 07 and 08 February 1996; processed for Method 8270 on 09 and 14 February (see item 1), and analyzed according to criteria set forth in SW 846 Method 8270 for TCL Semivolatile target compounds on 11,12,15 and 17 February 1996.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Four (4) mL portions of the 8330 Acetonitrile extracts were spiked with Semivolatile surrogates and partitioned into Methylenechloride. Due to the presence of Acetonitrile in the initial extracts, poor chromatography was observed in the Semivolatile analysis for samples AFTOUT-EXP/SV-R1-CND, IN/OUT-EXP/SV-SB-CND, AFTOUT-EXP/SV-R1-FX and IN/OUT -EXP/SV-SB-FX. Two extracts (AFT/OUT-EXP/SV-R1-CND and AFTOUT-EXP/SV-R1-FX) were concentrated to near dryness and brought back up to volume with Dichloromethane in an attempt to remove more of the Acetonitrile. These extracts were analyzed with improved chromatography and reported as reanalyses for confirmation of the results. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
2. All required holding times for extraction and analysis were met.
3. Non-target compounds were detected in these samples.
4. Three (3) of one-hundred-twenty (120) surrogate recoveries were outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met {i.e., no more than one outlier per fraction (acid and base neutral) and no recoveries less than 10%}.
5. Two (2) of forty-four (44) blank spike recoveries were outside EPA QC limits.
6. The method blank 96LE0209-MB1 contained the target compound Pentachlorophenol and the common contaminant Bis (2-Ethylhexyl)phthalate at levels less than the CRQL.



7. Internal standard area criteria were not met for samples AFTIN-EXP-R1-FX and AFTIN-EXP-R1MS-FX. The GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly and all surrogate recoveries were within QC limits; consequently, samples were not reanalyzed.
8. The sample IDs for this set of samples were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters on Organic CLP forms.

*James C. Miller, Unit Leader*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2-22-96

Date

GLOSSARY OF BNA DATA

DATA QUALIFIERS

- U     =     Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
  
- J     =     Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
  
- B     =     This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
  
- E     =     Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
  
- D     =     Identifies all compounds identified in an analysis at a secondary dilution factor.
  
- I     =     Interference.
  
- NQ    =     Result qualitatively confirmed but not able to quantify.
  
- A     =     Indicates that a TIC is a suspected aldol-condensation product.
  
- N     =     Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
  
- X     =     This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
  
- Y     =     Additional qualifiers used as required are explained in the case narrative.



## GLOSSARY OF BNA DATA

### ABBREVIATIONS

|       |   |                                                                                                                                                                                  |
|-------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BS    | = | Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported. |
| BSD   | = | Indicates blank spike duplicate.                                                                                                                                                 |
| MS    | = | Indicates matrix spike.                                                                                                                                                          |
| MSD   | = | Indicates matrix spike duplicate.                                                                                                                                                |
| DL    | = | Suffix added to sample number to indicate that results are from a diluted analysis.                                                                                              |
| NA    | = | Not Applicable.                                                                                                                                                                  |
| DF    | = | Dilution Factor.                                                                                                                                                                 |
| NR    | = | Not Required.                                                                                                                                                                    |
| SP, Z | = | Indicates Spiked Compound.                                                                                                                                                       |

## TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP** - Missed Peak: manually added peak not found by automatic quan program.
- PA** - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI** - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP** - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB** - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI** - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

# WESTON® Sample Discrepancy Report (SDR)

SDR #: 96M5030

Initiator: Deb Feick  
Date: 2/14/96  
Client: CDE-Hot Gas

RFW Batch: 9602L916, 9603  
Samples: see below  
Method: SW846/MCAWW/CLP/

Parameter: 0025H  
Matrix: Air water  
Prep Batch: 95LE0209

## 1. Reason for SDR

- a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C  
☐ Transcription Error ☐ Wrong Test Code ☐ Other \_\_\_\_\_
- b. General Discrepancy  
☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: \_\_\_\_\_

## c. QC Problem (Include all relevant specific results; attach data if necessary)

*FYI - due to initial extraction of HPLC with Acetonitrile the following samples had poor chromatography: 9602L916-004, 009, 021, 022; 9602L916-004, 009, 014, 027, 029, 031. Each internal surrogate in these samples was split into 20-3 peaks. See attached.*

## 2. Known or Probable Causes(s)

## 3. Discussion and Proposed Action

Other Description:

- ☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

- ① Sum split peaks and report total % recovery  
② Bring up remaining extract in a volume of DCM and re-concentrate & reanalyze.

## 4. Project Manager Instructions...signature/date: 2/14/96

- ☒ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☐ Client Contacted:  
Date/Person: \_\_\_\_\_  
☐ Add  
☐ Cancel

- Concur with ①.  
② Attempt to exchange samples 916-004, 021 (and 020 if necessary) to DCM only and reanalyze. Please have Kevin Meenan talk to OSPH on the procedure.

## 5. Final Action...signature/date: \_\_\_\_\_

Other Explanation:

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☐ Included in Case Narrative  
☐ Hard Copy COC Revised  
☐ Electronic COC Revised  
☐ EDD Corrections Completed

*reported the "exchanged" extracts for samples 9602L916-004 and 9602L916-021 as reanalyses for confirmation. noted in narrative on 2/14/96*

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR  
☒ Initiator: Deb Feick  
☒ Lab Manager: J. Michael Taylor  
☒ Project Mgr: Kelly Baker  
☒ Section Mgr: Siery Durka/Daniels  
☒ QA Section Mgr: Dianne Therry  
☒ QA File: Feldman/Racioppi/Shaffer  
☒ Data Reporting: Som Basuthakur  
☒ Sample Prep: Osei-Mensah/Swisher

Route Distribution of Completed SDR  
☐ Metals: Reichner/Doughty  
☐ Inorganic: Perrone/Leonards  
☐ GC/LC: Jarvis/Skrzat/Schnell  
☐ MS: LeMin/McIntyre/Taylor/Kasdras/Steele  
☐ Log-in: Geiger  
☐ EDD: Miller  
☐ Admin: Brewer/Keehn/Edgington  
☐ Other: \_\_\_\_\_

Initiator: K. Baker RFW Batch: 9602L963, 916 SDR #: 716714/1010  
Date: 2-9-96 Samples: see below Parameter: SVDA  
Client: COE-HOT GAS Method: SW846-MCAWW-CLP Matrix: AIR  
Prep Batch: \_\_\_\_\_

1. Reason for SDR

- a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C  
☐ Transcription Error ☐ Wrong Test Code ☐ Other \_\_\_\_\_
- b. General Discrepancy  
☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)....signature/date: \_\_\_\_\_

c. QC Problem (Include all relevant specific results; attach data if necessary)

Add 0625 to the following samples.  
9602L916-13, 18, 23, 24, 25, 26  
9602L963-19, 24, 32, 33, 34, 35

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

Other Description: \_\_\_\_\_

- ☒ Re-log  
☐ Entire Batch  
☒ Following Samples: see above  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: K. Baker 2/9/96

- ☒ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☒ Client Contacted:  
Date/Person Colleen Ponton 2/9/96  
☐ Add  
☐ Cancel

5. Final Action...signature/date: 09212916

Other Explanation: \_\_\_\_\_

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☐ Included in Case Narrative  
☒ Hard Copy COC Revised  
☒ Electronic COC Revised  
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

| Route                    | Distribution of Completed SDR                                         | Route                    | Distribution of Completed SDR                                     |
|--------------------------|-----------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> Initiator                         | <input type="checkbox"/> | <input type="checkbox"/> Metals: Reichner/Doughty                 |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> Lab Manager: J. Michael Taylor    | <input type="checkbox"/> | <input type="checkbox"/> Inorganic: Perrone/Leonards              |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> Project Mgr:                      | <input type="checkbox"/> | <input type="checkbox"/> GC/LC: Jarvis/Skrzat/Schnell             |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> Section Mgr: Siery/Durke/Daniels  | <input type="checkbox"/> | <input type="checkbox"/> MS: LeMin/McIntyre/Taylor/Kasdras/Steele |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> QA Section Mgr: Dianne Therry     | <input type="checkbox"/> | <input type="checkbox"/> Log-in: Geiger                           |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> QA File: Feldman/Racioppi/Shaffer | <input type="checkbox"/> | <input type="checkbox"/> EDD: Miller                              |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> Data Reporting: Som Basuthakur    | <input type="checkbox"/> | <input type="checkbox"/> Admin: Brewer/Keehn/Edgington            |
| <input type="checkbox"/> | <input type="checkbox"/> Sample Prep: Osei-Mensah/Swisher             | <input type="checkbox"/> | <input type="checkbox"/> Other: _____                             |



## WESTON® Sample Discrepancy Report (SDR)

SDR #: 76M 0070Initiator: K. BakerRFW Batch: 9602L916, 943Parameter: ALLDate: 2-14-96Samples: ALLMatrix: AIRClient: AAAP Hot GasMethod: SW846/MCAWW/CLP

Prep Batch: \_\_\_\_\_

## 1. Reason for SDR

a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C.  
☐ Transcription Error ☐ Wrong Test Code ☒ Other wrong matrix

## b. General Discrepancy

☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: \_\_\_\_\_

## c. QC Problem (Include all relevant specific results; attach data if necessary)

*ALL matrices should be air.  
 please change all samples listed as water to air.*

## 2. Known or Probable Causes(s)

## 3. Discussion and Proposed Action

Other Description:

- ☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

*X change matrix where appropriate  
 to air.*

4. Project Manager Instructions...signature/date: K Baker 2/14/96

- ☒ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☐ Client Contacted:  
 Date/Person \_\_\_\_\_  
☐ Add  
☐ Cancel

5. Final Action...signature/date: Dynne 2/15/96

Other Explanation:

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☐ Included in Case Narrative  
☒ Hard Copy COC Revised  
☒ Electronic COC Revised  
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

## Route Distribution of Completed SDR

- ☒ Initiator  
☒ Lab Manager: J. Michael Taylor  
☒ Project Mgr:  
☒ Section Mgr: Siery/Durke/Daniels  
☒ QA Section Mgr: Dianne Therry  
☒ QA File: Feldman/Racioppi/Shaffer  
☒ Data Reporting: Som Basuthakur  
☐ Sample Prep: Osei-Mensah/Swisher

## Route Distribution of Completed SDR

- ☐ Metals: Reichner/Doughty  
☐ Inorganic: Perrone/Leonards  
☐ GC/LC: Jarvis/Skrzat/Schnell  
☐ MS: LeMin/McIntyre/Taylor/Kasdras/Steele  
☐ Log-in: Geiger  
☐ EDD: Miller  
☐ Admin: Brewer/Keehn/Edgington  
☐ Other: \_\_\_\_\_

## QC SUMMARY

2D  
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot No.: 9602L916

|    | CLIENT<br>SAMPLE NO.   | S1<br>(NBZ) # | S2<br>(FBP) # | S3<br>(TPH) # | S4<br>(PHL) # | S5<br>(2FP) # | S6<br>(TBP) # | OTHER | TOT<br>OUT |
|----|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|-------|------------|
| 01 | AFTOUT-EXP/SV-R1-CND   | 68            | 66            | 110           | 57            | 78            | 86            |       | 0          |
| 02 | AFTOUT-EXP/SV-R1-CNDRE | 48            | 54            | 93            | 41            | 43            | 59            |       | 0          |
| 03 | IN/OUT-EXP/SV-SB-ACE   | 79            | 74            | 96            | 70            | 98            | 79            |       | 0          |
| 04 | IN/OUT-EXP/SV-SB-CND   | 55            | 58            | 88            | 46            | 63            | 75            |       | 0          |
| 05 | AFTIN-EXP-R1-CND       | 38            | 69            | 77            | 41            | 86            | 60            |       | 0          |
| 06 | AFTIN-EXP-R1MS-CND     | 62            | 75            | 82            | 64            | 109           | 68            |       | 0          |
| 07 | AFTOUT-EXP/SV-R1-FB    | 47            | 52            | 83            | 40            | 53            | 75            |       | 0          |
| 08 | AFTOUT-EXP/SV-R1-FX    | 68            | 61            | 85            | 55            | 74            | 83            |       | 0          |
| 09 | AFTOUT-EXP/SV-R1-FXRE  | 43            | 42            | 87            | 33            | 33            | 56            |       | 0          |
| 10 | IN/OUT-EXP/SV-SB-FX    | 71            | 72            | 84            | 48            | 69            | 61            |       | 0          |
| 11 | AFTIN-EXP-R1-FB        | 40            | 82            | 76            | 55            | 104           | 62            |       | 0          |
| 12 | AFTIN-EXP-R1-FX        | 56            | 71            | 79            | 60            | 99            | 67            |       | 0          |
| 13 | AFTIN-EXP-R1MS-FB      | 62            | 72            | 88            | 60            | 97            | 61            |       | 0          |
| 14 | AFTIN-EXP-R1MS-FX      | 56            | 67            | 83            | 55            | 98            | 65            |       | 0          |
| 15 | SBLKSOLE0209-MB1       | 74            | 75            | 81            | 19 *          | 46            | 68            |       | 1          |
| 16 | SBLKSOLE0209-MB1 BS    | 72            | 82            | 84            | 19 *          | 36            | 91            |       | 1          |
| 17 | SBLKSOLE0209-MB1 BSD   | 66            | 77            | 75            | 17 *          | 31            | 84            |       | 1          |
| 18 | SBLKSXLE0236-MB1       | 53            | 67            | 72            | 48            | 79            | 56            |       | 0          |
| 19 | SBLKSXLE0236-MB1 BS    | 71            | 89            | 94            | 62            | 102           | 74            |       | 0          |
| 20 | SBLKSXLE0236-MB1 BSD   | 70            | 89            | 89            | 63            | 105           | 71            |       | 0          |

QC LIMITS

|                                 |           |
|---------------------------------|-----------|
| S1 (NBZ) = Nitrobenzene-d5      | ( 23-120) |
| S2 (FBP) = 2-Fluorobiphenyl     | ( 30-115) |
| S3 (TPH) = p-Terphenyl-d14      | ( 18-137) |
| S4 (PHL) = Phenol-d5            | ( 24-113) |
| S5 (2FP) = 2-Fluorophenol       | ( 25-121) |
| S6 (TBP) = 2,4,6-Tribromophenol | ( 19-122) |

# Column to be used to flag recovery values  
 \* Values outside of QC limits  
 D Surrogates diluted out

3D

## SOIL SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot No.: 9602L916BLANK Spike - Sample No.: SBLKSOLE0209-MB1Level: (low/med) LOW

| COMPOUND                   | SPIKE<br>ADDED<br>UG/L | SAMPLE<br>CONCENTRATION<br>UG/L | BS<br>CONCENTRATION<br>UG/L | BS<br>%<br>REC # | QC<br>LIMITS<br>REC |
|----------------------------|------------------------|---------------------------------|-----------------------------|------------------|---------------------|
| Phenol                     | 250                    | 0                               | 44.9                        | 18 *             | 26 - 90             |
| 2-Chlorophenol             | 250                    | 0                               | 163                         | 65               | 25 -102             |
| 1,4-Dichlorobenzene        | 125                    | 0                               | 80.7                        | 65               | 28 -104             |
| N-Nitroso-Di-n-propylamine | 125                    | 0                               | 96.2                        | 77               | 41 -126             |
| 1,2,4-Trichlorobenzene     | 125                    | 0                               | 90.7                        | 73               | 38 -107             |
| 4-Chloro-3-methylphenol    | 250                    | 0                               | 187                         | 75               | 26 -103             |
| Acenaphthene               | 125                    | 0                               | 93.1                        | 75               | 31 -137             |
| 4-Nitrophenol              | 250                    | 0                               | 47.2                        | 19               | 11 -114             |
| 2,4-Dinitrotoluene         | 125                    | 0                               | 102                         | 82               | 28 - 89             |
| Pentachlorophenol          | 250                    | 3.32                            | 199                         | 78               | 17 -109             |
| Pyrene                     | 125                    | 0                               | 96.8                        | 77               | 35 -142             |

| COMPOUND                   | SPIKE<br>ADDED<br>UG/L | BSD<br>CONCENTRATION<br>UG/L | BSD<br>%<br>REC # | %<br>RPD # | QC LIMITS<br>RPD   REC |
|----------------------------|------------------------|------------------------------|-------------------|------------|------------------------|
| Phenol                     | 250                    | 41.4                         | 17 *              | 5          | 35   26 - 90           |
| 2-Chlorophenol             | 250                    | 149                          | 59                | 9          | 50   25 -102           |
| 1,4-Dichlorobenzene        | 125                    | 72.9                         | 58                | 11         | 27   28 -104           |
| N-Nitroso-Di-n-propylamine | 125                    | 87.6                         | 70                | 9          | 38   41 -126           |
| 1,2,4-Trichlorobenzene     | 125                    | 84.0                         | 67                | 8          | 23   38 -107           |
| 4-Chloro-3-methylphenol    | 250                    | 171                          | 68                | 9          | 33   26 -103           |
| Acenaphthene               | 125                    | 86.8                         | 69                | 8          | 19   31 -137           |
| 4-Nitrophenol              | 250                    | 48.2                         | 19                | 0          | 50   11 -114           |
| 2,4-Dinitrotoluene         | 125                    | 94.6                         | 76                | 7          | 47   28 - 89           |
| Pentachlorophenol          | 250                    | 208                          | 82                | 5          | 47   17 -109           |
| Pyrene                     | 125                    | 85.4                         | 68                | 12         | 36   35 -142           |

# Column to be used to flag recovery and RPD values with an asterisk  
 \* Values outside of QC limits

RPD: 0 out of 11 outside limits  
 Spike Recovery: 2 out of 22 outside limits

COMMENTS:

3D

## SOIL SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot No.: 9602L916BLANK Spike - Sample No.: SBLKSXLE0236-MB1Level: (low/med) LOW

| COMPOUND                   | SPIKE<br>ADDED | SAMPLE<br>CONCENTRATION | BS<br>CONCENTRATION | BS<br>% | QC<br>LIMITS |
|----------------------------|----------------|-------------------------|---------------------|---------|--------------|
|                            | UG/KG          | UG/KG                   | UG/KG               | REC #   | REC          |
| Phenol                     | 250            | 0                       | 126                 | 51      | 26 - 90      |
| 2-Chlorophenol             | 250            | 0                       | 164                 | 66      | 25 -102      |
| 1,4-Dichlorobenzene        | 125            | 0                       | 68.3                | 55      | 28 -104      |
| N-Nitroso-Di-n-propylamine | 125            | 0                       | 78.4                | 63      | 41 -126      |
| 1,2,4-Trichlorobenzene     | 125            | 0                       | 81.2                | 65      | 38 -107      |
| 4-Chloro-3-methylphenol    | 250            | 0                       | 194                 | 77      | 26 -103      |
| Acenaphthene               | 125            | 0                       | 95.2                | 76      | 31 -137      |
| 4-Nitrophenol              | 250            | 0                       | 136                 | 54      | 11 -114      |
| 2,4-Dinitrotoluene         | 125            | 0                       | 95.7                | 77      | 28 - 89      |
| Pentachlorophenol          | 250            | 0                       | 207                 | 83      | 17 -109      |
| Pyrene                     | 125            | 0                       | 101                 | 81      | 35 -142      |

| COMPOUND                   | SPIKE<br>ADDED | BSD<br>CONCENTRATION | BSD<br>% | %     | QC LIMITS |         |
|----------------------------|----------------|----------------------|----------|-------|-----------|---------|
|                            | UG/KG          | UG/KG                | REC #    | RPD # | RPD       | REC     |
| Phenol                     | 250            | 129                  | 51       | 0     | 35        | 26 - 90 |
| 2-Chlorophenol             | 250            | 163                  | 65       | 1     | 50        | 25 -102 |
| 1,4-Dichlorobenzene        | 125            | 71.4                 | 57       | 3     | 27        | 28 -104 |
| N-Nitroso-Di-n-propylamine | 125            | 78.1                 | 62       | 1     | 38        | 41 -126 |
| 1,2,4-Trichlorobenzene     | 125            | 82.6                 | 66       | 1     | 23        | 38 -107 |
| 4-Chloro-3-methylphenol    | 250            | 187                  | 75       | 2     | 33        | 26 -103 |
| Acenaphthene               | 125            | 93.8                 | 75       | 1     | 19        | 31 -137 |
| 4-Nitrophenol              | 250            | 145                  | 58       | 7     | 50        | 11 -114 |
| 2,4-Dinitrotoluene         | 125            | 94.6                 | 76       | 1     | 47        | 28 - 89 |
| Pentachlorophenol          | 250            | 205                  | 82       | 1     | 47        | 17 -109 |
| Pyrene                     | 125            | 95.0                 | 76       | 6     | 36        | 35 -142 |

# Column to be used to flag recovery and RPD values with an asterisk  
 \* Values outside of QC limits

RPD: 0 out of 11 outside limits  
 Spike Recovery: 0 out of 22 outside limits

COMMENTS:

4B  
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021103

Lab Sample ID: 96LE0209-MB1

Date Extracted: 02/09/96

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 02/11/96

Time Analyzed: 1123

Matrix: (Soil/Water) AIR

Level: (low/med) LOW

Instrument ID: 4500V

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

|    | CLIENT<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED |
|----|------------------------|------------------|----------------|------------------|
|    | =====                  | =====            | =====          | =====            |
| 01 | AFTOUT-EXP/SV-R1-CNDRE | 9602L916-004     | M021503        | 02/15/96         |
| 02 | AFTOUT-EXP/SV-R1-FXRE  | 9602L916-021     | M021504        | 02/15/96         |
| 03 | SBLKSOLE0209-MB1 BS    | 96LE0209-MB1S    | V021104        | 02/11/96         |
| 04 | SBLKSOLE0209-MB1 BSD   | 96LE0209-MB1T    | V021105        | 02/11/96         |
| 05 | AFTOUT-EXP/SV-R1-CND   | 9602L916-004     | V021106        | 02/11/96         |
| 06 | IN/OUT-EXP/SV-SB-CND   | 9602L916-009     | V021108        | 02/11/96         |
| 07 | AFTOUT-EXP/SV-R1-FB    | 9602L916-020     | V021109        | 02/11/96         |
| 08 | AFTOUT-EXP/SV-R1-FX    | 9602L916-021     | V021110        | 02/11/96         |
| 09 | IN/OUT-EXP/SV-SB-FX    | 9602L916-022     | V021111        | 02/11/96         |
| 10 | IN/OUT-EXP/SV-SB-ACE   | 9602L916-006     | V021211        | 02/12/96         |

COMMENTS:

## SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASLab File ID: V021703Lab Sample ID: 96LE0236-MB1Date Extracted: 02/14/96Extraction: (SepF/Cont/Sonc) SEPFDate Analyzed: 02/17/96Time Analyzed: 1113Matrix: (Soil/Water) AIRLevel: (low/med) LOWInstrument ID: 4500V

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|
|    | =====                | =====            | =====          | =====            |
| 01 | SBLKSXLE0236-MB1 BS  | 96LE0236-MB1S    | V021704        | 02/17/96         |
| 02 | SBLKSXLE0236-MB1 BSD | 96LE0236-MB1T    | V021705        | 02/17/96         |
| 03 | AFTIN-EXP-R1-CND     | 9602L916-013     | V021706        | 02/17/96         |
| 04 | AFTIN-EXP-R1MS-CND   | 9602L916-018     | V021707        | 02/17/96         |
| 05 | AFTIN-EXP-R1-FB      | 9602L916-023     | V021708        | 02/17/96         |
| 06 | AFTIN-EXP-R1-FX      | 9602L916-024     | V021709        | 02/17/96         |
| 07 | AFTIN-EXP-R1MS-FB    | 9602L916-025     | V021710        | 02/17/96         |
| 08 | AFTIN-EXP-R1MS-FX    | 9602L916-026     | V021711        | 02/17/96         |

COMMENTS:

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASDFTPP Injection Date: 02/14/96Lab File ID: M021403DFTPP Injection Time: 1654Instrument ID: 5100m

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 44.8 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 69  | Mass 69 relative abundance         | 58.5 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 127 | 40.0 - 60.0% of mass 198           | 51.2 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.0 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 5.3 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 20.8 ✓               |
| 365 | Greater than 1.00% of mass 198     | 1.35 ✓               |
| 441 | Present, but less than mass 443    | 7.2 ✓                |
| 442 | Greater than 40.0% of mass 198     | 64.4 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 11.6 (✓ 18.0)2       |

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | M021404        | 02/14/96         | 1729             |
| 02 | SSTD80               | SSTD80           | M021405        | 02/14/96         | 1817             |
| 03 | SSTD120              | SSTD120          | M021406        | 02/14/96         | 1904             |
| 04 | SSTD160              | SSTD160          | M021407        | 02/14/96         | 1952             |
| 05 | SSTD20               | SSTD20           | M021408        | 02/14/96         | 2039             |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
| 08 |                      |                  |                |                  |                  |
| 09 |                      |                  |                |                  |                  |
| 10 |                      |                  |                |                  |                  |
| 11 |                      |                  |                |                  |                  |
| 12 |                      |                  |                |                  |                  |
| 13 |                      |                  |                |                  |                  |
| 14 |                      |                  |                |                  |                  |
| 15 |                      |                  |                |                  |                  |
| 16 |                      |                  |                |                  |                  |
| 17 |                      |                  |                |                  |                  |
| 18 |                      |                  |                |                  |                  |
| 19 |                      |                  |                |                  |                  |
| 20 |                      |                  |                |                  |                  |



5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASLab File ID: M021501DFTPP Injection Date: 02/15/96Instrument ID: 5100mDFTPP Injection Time: 1314

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 49.9 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 69  | Mass 69 relative abundance         | 62.0 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 127 | 40.0 - 60.0% of mass 198           | 52.4 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.0 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 5.1 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 21.2 ✓               |
| 365 | Greater than 1.00% of mass 198     | 1.32 ✓               |
| 441 | Present, but less than mass 443    | 7.7 ✓                |
| 442 | Greater than 40.0% of mass 198     | 64.8 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 11.9 ( 18.3)2        |

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|------------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50                 | SSTD50           | M021502        | 02/15/96         | 1348             |
| 02 | AFTOUT-EXP/SV-R1-CNDRE | 9602L916-004     | M021503        | 02/15/96         | 1522             |
| 03 | AFTOUT-EXP/SV-R1-FXRE  | 9602L916-021     | M021504        | 02/15/96         | 1609             |
| 04 |                        |                  |                |                  |                  |
| 05 |                        |                  |                |                  |                  |
| 06 |                        |                  |                |                  |                  |
| 07 |                        |                  |                |                  |                  |
| 08 |                        |                  |                |                  |                  |
| 09 |                        |                  |                |                  |                  |
| 10 |                        |                  |                |                  |                  |
| 11 |                        |                  |                |                  |                  |
| 12 |                        |                  |                |                  |                  |
| 13 |                        |                  |                |                  |                  |
| 14 |                        |                  |                |                  |                  |
| 15 |                        |                  |                |                  |                  |
| 16 |                        |                  |                |                  |                  |
| 17 |                        |                  |                |                  |                  |
| 18 |                        |                  |                |                  |                  |
| 19 |                        |                  |                |                  |                  |
| 20 |                        |                  |                |                  |                  |

030

5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V020801

DFTPP Injection Date: 02/08/96

Instrument ID: 4500V

DFTPP Injection Time: 0830

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 55.9 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0) 1         |
| 69  | Mass 69 relative abundance         | 63.2 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0) 1         |
| 127 | 40.0 - 60.0% of mass 198           | 53.8 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.0 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 6.1 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 26.9 ✓               |
| 365 | Greater than 1.00% of mass 198     | 4.52 ✓               |
| 441 | Present, but less than mass 443    | 7.2 ✓                |
| 442 | Greater than 40.0% of mass 198     | 61.2 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 11.8 (✓ 19.3) 2      |

*OK  
DAF  
2/20/96*

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V020802        | 02/08/96         | 0908             |
| 02 | SSTD80               | SSTD80           | V020803        | 02/08/96         | 1108             |
| 03 | SSTD120              | SSTD120          | V020804        | 02/08/96         | 1157             |
| 04 | SSTD160              | SSTD160          | V020805        | 02/08/96         | 1246             |
| 05 | SSTD20               | SSTD20           | V020806        | 02/08/96         | 1336             |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
| 08 |                      |                  |                |                  |                  |
| 09 |                      |                  |                |                  |                  |
| 10 |                      |                  |                |                  |                  |
| 11 |                      |                  |                |                  |                  |
| 12 |                      |                  |                |                  |                  |
| 13 |                      |                  |                |                  |                  |
| 14 |                      |                  |                |                  |                  |
| 15 |                      |                  |                |                  |                  |
| 16 |                      |                  |                |                  |                  |
| 17 |                      |                  |                |                  |                  |
| 18 |                      |                  |                |                  |                  |
| 19 |                      |                  |                |                  |                  |
| 20 |                      |                  |                |                  |                  |

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASLab File ID: V021101DFTPP Injection Date: 02/11/96Instrument ID: 4500VDFTPP Injection Time: 0854

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 42.9 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 69  | Mass 69 relative abundance         | 44.0 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 127 | 40.0 - 60.0% of mass 198           | 46.2 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.0 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 6.8 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 23.5 ✓               |
| 365 | Greater than 1.00% of mass 198     | 2.97 ✓               |
| 441 | Present, but less than mass 443    | 5.8 ✓                |
| 442 | Greater than 40.0% of mass 198     | 47.1 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 9.0 ( 19.1)2         |

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021102        | 02/11/96         | 0941             |
| 02 | SBLKSOLE0209-MB1     | 96LE0209-MB1     | V021103        | 02/11/96         | 1123             |
| 03 | SBLKSOLE0209-MB1 BS  | 96LE0209-MB1S    | V021104        | 02/11/96         | 1212             |
| 04 | SBLKSOLE0209-MB1 BSD | 96LE0209-MB1T    | V021105        | 02/11/96         | 1301             |
| 05 | AFTOUT-EXP/SV-R1-CND | 9602L916-004     | V021106        | 02/11/96         | 1350             |
| 06 | IN/OUT-EXP/SV-SB-CND | 9602L916-009     | V021108        | 02/11/96         | 1528             |
| 07 | AFTOUT-EXP/SV-R1-FB  | 9602L916-020     | V021109        | 02/11/96         | 1618             |
| 08 | AFTOUT-EXP/SV-R1-FX  | 9602L916-021     | V021110        | 02/11/96         | 1707             |
| 09 | IN/OUT-EXP/SV-SB-FX  | 9602L916-022     | V021111        | 02/11/96         | 1756             |
| 10 |                      |                  |                |                  |                  |
| 11 |                      |                  |                |                  |                  |
| 12 |                      |                  |                |                  |                  |
| 13 |                      |                  |                |                  |                  |
| 14 |                      |                  |                |                  |                  |
| 15 |                      |                  |                |                  |                  |
| 16 |                      |                  |                |                  |                  |
| 17 |                      |                  |                |                  |                  |
| 18 |                      |                  |                |                  |                  |
| 19 |                      |                  |                |                  |                  |
| 20 |                      |                  |                |                  |                  |

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASLab File ID: V021201DFTPP Injection Date: 02/12/96Instrument ID: 4500VDFTPP Injection Time: 0920

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 36.2✓                |
| 68  | Less than 2.0% of mass 69          | 0.0✓ 0.0)1           |
| 69  | Mass 69 relative abundance         | 42.4✓                |
| 70  | Less than 2.0% of mass 69          | 0.0✓ 0.0)1           |
| 127 | 40.0 - 60.0% of mass 198           | 44.5✓                |
| 197 | Less than 1.0% of mass 198         | 0.0✓                 |
| 198 | Base Peak, 100% relative abundance | 100.0✓               |
| 199 | 5.0 to 9.0% of mass 198            | 6.4✓                 |
| 275 | 10.0 - 30.0% of mass 198           | 23.5✓                |
| 365 | Greater than 1.00% of mass 198     | 2.96✓                |
| 441 | Present, but less than mass 443    | 5.4✓                 |
| 442 | Greater than 40.0% of mass 198     | 43.0✓                |
| 443 | 17.0 - 23.0% of mass 442           | 8.6(✓ 20.0)2         |

*ok  
0.0%  
2.0%  
2.0%  
2.0%*

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021202        | 02/12/96         | 0956             |
| 02 | SSTD80               | SSTD80           | V021203        | 02/12/96         | 1119             |
| 03 | SSTD120              | SSTD120          | V021204        | 02/12/96         | 1208             |
| 04 | SSTD160              | SSTD160          | V021205        | 02/12/96         | 1558             |
| 05 | SSTD20               | SSTD20           | V021206        | 02/12/96         | 1648             |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
| 08 |                      |                  |                |                  |                  |
| 09 |                      |                  |                |                  |                  |
| 10 |                      |                  |                |                  |                  |
| 11 |                      |                  |                |                  |                  |
| 12 |                      |                  |                |                  |                  |
| 13 |                      |                  |                |                  |                  |
| 14 |                      |                  |                |                  |                  |
| 15 |                      |                  |                |                  |                  |
| 16 |                      |                  |                |                  |                  |
| 17 |                      |                  |                |                  |                  |
| 18 |                      |                  |                |                  |                  |
| 19 |                      |                  |                |                  |                  |
| 20 |                      |                  |                |                  |                  |

5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021207

DFTPP Injection Date: 02/12/96

Instrument ID: 4500V

DFTPP Injection Time: 1750

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 30.8 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 69  | Mass 69 relative abundance         | 37.4 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 127 | 40.0 - 60.0% of mass 198           | 41.8 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.0 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 7.0 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 25.6 ✓               |
| 365 | Greater than 1.00% of mass 198     | 3.41 ✓               |
| 441 | Present, but less than mass 443    | 7.3 ✓                |
| 442 | Greater than 40.0% of mass 198     | 58.4 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 10.9 ( 18.7)2        |

1-Value is % mass 69

2-Value is % mass 442

*oh  
off  
2/22/96*

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021208        | 02/12/96         | 1824             |
| 02 | IN/OUT-EXP/SV-SB-ACE | 9602L916-006     | V021211        | 02/12/96         | 2123             |
| 03 |                      |                  |                |                  |                  |
| 04 |                      |                  |                |                  |                  |
| 05 |                      |                  |                |                  |                  |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
| 08 |                      |                  |                |                  |                  |
| 09 |                      |                  |                |                  |                  |
| 10 |                      |                  |                |                  |                  |
| 11 |                      |                  |                |                  |                  |
| 12 |                      |                  |                |                  |                  |
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| 14 |                      |                  |                |                  |                  |
| 15 |                      |                  |                |                  |                  |
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| 18 |                      |                  |                |                  |                  |
| 19 |                      |                  |                |                  |                  |
| 20 |                      |                  |                |                  |                  |

5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021601

DFTPP Injection Date: 02/16/96

Instrument ID: 4500V

DFTPP Injection Time: 0926

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 39.9 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.6 ✓ 1.3)1          |
| 69  | Mass 69 relative abundance         | 49.3 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 127 | 40.0 - 60.0% of mass 198           | 55.2 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.7 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 6.6 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 28.3 ✓               |
| 365 | Greater than 1.00% of mass 198     | 5.50 ✓               |
| 441 | Present, but less than mass 443    | 12.2 ✓               |
| 442 | Greater than 40.0% of mass 198     | 93.2 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 17.7 ✓ 19.0)2        |

*OK  
DFT  
2/16/96*

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021602        | 02/16/96         | 1010             |
| 02 | SSTD80               | SSTD80           | V021603        | 02/16/96         | 1148             |
| 03 | SSTD120              | SSTD120          | V021604        | 02/16/96         | 1237             |
| 04 | SSTD160              | SSTD160          | V021605        | 02/16/96         | 1326             |
| 05 | SSTD20               | SSTD20           | V021606        | 02/16/96         | 1416             |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
| 08 |                      |                  |                |                  |                  |
| 09 |                      |                  |                |                  |                  |
| 10 |                      |                  |                |                  |                  |
| 11 |                      |                  |                |                  |                  |
| 12 |                      |                  |                |                  |                  |
| 13 |                      |                  |                |                  |                  |
| 14 |                      |                  |                |                  |                  |
| 15 |                      |                  |                |                  |                  |
| 16 |                      |                  |                |                  |                  |
| 17 |                      |                  |                |                  |                  |
| 18 |                      |                  |                |                  |                  |
| 19 |                      |                  |                |                  |                  |
| 20 |                      |                  |                |                  |                  |

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASLab File ID: V021701DFTPP Injection Date: 02/17/96Instrument ID: 4500VDFTPP Injection Time: 0849

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 33.2 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.7 (✓ 1.4) 1        |
| 69  | Mass 69 relative abundance         | 45.6 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.0 (✓ 0.0) 1        |
| 127 | 40.0 - 60.0% of mass 198           | 52.9 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.0 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 7.2 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 29.1 ✓               |
| 365 | Greater than 1.00% of mass 198     | 5.46 ✓               |
| 441 | Present, but less than mass 443    | 10.9 ✓               |
| 442 | Greater than 40.0% of mass 198     | 83.5 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 16.14 19.3) 2        |

1-Value is % mass 69

2-Value is % mass 442

*OK  
2/21/96  
0/20/96*

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021702        | 02/17/96         | 0923             |
| 02 | SBLKSXLE0236-MB1     | 96LE0236-MB1     | V021703        | 02/17/96         | 1113             |
| 03 | SBLKSXLE0236-MB1 BS  | 96LE0236-MB1S    | V021704        | 02/17/96         | 1201             |
| 04 | SBLKSXLE0236-MB1 BSD | 96LE0236-MB1T    | V021705        | 02/17/96         | 1251             |
| 05 | AFTIN-EXP-R1-CND     | 9602L916-013     | V021706        | 02/17/96         | 1340             |
| 06 | AFTIN-EXP-R1MS-CND   | 9602L916-018     | V021707        | 02/17/96         | 1429             |
| 07 | AFTIN-EXP-R1-FB      | 9602L916-023     | V021708        | 02/17/96         | 1519             |
| 08 | AFTIN-EXP-R1-FX      | 9602L916-024     | V021709        | 02/17/96         | 1607             |
| 09 | AFTIN-EXP-R1MS-FB    | 9602L916-025     | V021710        | 02/17/96         | 1657             |
| 10 | AFTIN-EXP-R1MS-FX    | 9602L916-026     | V021711        | 02/17/96         | 1746             |
| 11 |                      |                  |                |                  |                  |
| 12 |                      |                  |                |                  |                  |
| 13 |                      |                  |                |                  |                  |
| 14 |                      |                  |                |                  |                  |
| 15 |                      |                  |                |                  |                  |
| 16 |                      |                  |                |                  |                  |
| 17 |                      |                  |                |                  |                  |
| 18 |                      |                  |                |                  |                  |
| 19 |                      |                  |                |                  |                  |
| 20 |                      |                  |                |                  |                  |

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L916Lab File ID (Standard): M021502Date Analyzed: 02/15/96Instrument ID: 5100mTime Analyzed: 1348

|               |                        | IS1 (DCB) |       | IS2 (NPT) |        | IS3 (ANT) |        |
|---------------|------------------------|-----------|-------|-----------|--------|-----------|--------|
|               |                        | AREA      | # RT  | AREA      | # RT   | AREA      | # RT   |
| =====         |                        | =====     | ===== | =====     | =====  | =====     | =====  |
| 12 HOUR STD   |                        | 11724     | 8.733 | 46368     | 11.733 | 23101     | 16.167 |
| =====         |                        | =====     | ===== | =====     | =====  | =====     | =====  |
| UPPER LIMIT   |                        | 23448     | 9.23  | 92736     | 12.23  | 46202     | 16.67  |
| =====         |                        | =====     | ===== | =====     | =====  | =====     | =====  |
| LOWER LIMIT   |                        | 5862      | 8.23  | 23184     | 11.23  | 11551     | 15.67  |
| =====         |                        | =====     | ===== | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE |                        |           |       |           |        |           |        |
| NO.           |                        |           |       |           |        |           |        |
| =====         |                        | =====     | ===== | =====     | =====  | =====     | =====  |
| 01            | AFTOUT-EXP/SV-R1-CNDRE | 16667     | 8.733 | 63038     | 11.733 | 32288     | 16.167 |
| 02            | AFTOUT-EXP/SV-R1-FXRE  | 15599     | 8.650 | 58227     | 11.700 | 33092     | 16.150 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4  
 IS2 (NPT) = Naphthalene-d8  
 IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk



## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L916Lab File ID (Standard): M021502Date Analyzed: 02/15/96Instrument ID: 5100mTime Analyzed: 1348

|                           | IS4 (PHN) |       |        | IS5 (CRY) |        | IS6 (PRY) |        |
|---------------------------|-----------|-------|--------|-----------|--------|-----------|--------|
|                           | AREA      | #     | RT     | AREA      | #      | AREA      | #      |
| =====                     | =====     | ===== | =====  | =====     | =====  | =====     | =====  |
| 12 HOUR STD               | 33003     |       | 19.833 | 28934     | 25.650 | 24669     | 30.567 |
| =====                     | =====     | ===== | =====  | =====     | =====  | =====     | =====  |
| UPPER LIMIT               | 66006     |       | 20.33  | 57868     | 26.15  | 49338     | 31.07  |
| =====                     | =====     | ===== | =====  | =====     | =====  | =====     | =====  |
| LOWER LIMIT               | 16502     |       | 19.33  | 14467     | 25.15  | 12335     | 30.07  |
| =====                     | =====     | ===== | =====  | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.      |           |       |        |           |        |           |        |
| =====                     | =====     | ===== | =====  | =====     | =====  | =====     | =====  |
| 01 AFTOUT-EXP/SV-R1-CNDRE | 44550     |       | 19.833 | 32423     | 25.650 | 27966     | 30.550 |
| 02 AFTOUT-EXP/SV-R1-FXRE  | 46465     |       | 19.833 | 35451     | 25.650 | 32307     | 30.567 |

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

# Column used to flag internal standard area values with an asterisk

8B  
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L916

Lab File ID (Standard): V021102

Date Analyzed: 02/11/96

Instrument ID: 4500V

Time Analyzed: 0941

|                         | IS1 (DCB)<br>AREA # | RT    | IS2 (NPT)<br>AREA # | RT     | IS3 (ANT)<br>AREA # | RT     |
|-------------------------|---------------------|-------|---------------------|--------|---------------------|--------|
| =====                   | =====               | ===== | =====               | =====  | =====               | =====  |
| 12 HOUR STD             | 26253               | 9.000 | 118200              | 12.933 | 72624               | 18.533 |
| =====                   | =====               | ===== | =====               | =====  | =====               | =====  |
| UPPER LIMIT             | 52506               | 9.50  | 236400              | 13.43  | 145248              | 19.03  |
| =====                   | =====               | ===== | =====               | =====  | =====               | =====  |
| LOWER LIMIT             | 13127               | 8.50  | 59100               | 12.43  | 36312               | 18.03  |
| =====                   | =====               | ===== | =====               | =====  | =====               | =====  |
| CLIENT SAMPLE<br>NO.    |                     |       |                     |        |                     |        |
| =====                   | =====               | ===== | =====               | =====  | =====               | =====  |
| 01 AFTOUT-EXP/SV-R1-CND | 37211               | 8.950 | 142497              | 12.900 | 101617              | 18.517 |
| 02 IN/OUT-EXP/SV-SB-CND | 39103               | 8.933 | 144103              | 12.900 | 98983               | 18.533 |
| 03 AFTOUT-EXP/SV-R1-FB  | 36097               | 8.967 | 141154              | 12.917 | 92898               | 18.533 |
| 04 AFTOUT-EXP/SV-R1-FX  | 37937               | 8.967 | 137817              | 12.917 | 97438               | 18.533 |
| 05 IN/OUT-EXP/SV-SB-FX  | 35651               | 8.967 | 128505              | 12.900 | 90892               | 18.517 |
| 06 SBLKSOLE0209-MB1     | 34581               | 9.317 | 115633              | 13.050 | 75023               | 18.567 |
| 07 SBLKSOLE0209-MB1 BS  | 23976               | 8.967 | 124180              | 12.917 | 87110               | 18.533 |
| 08 SBLKSOLE0209-MB1 BSD | 24764               | 8.967 | 129296              | 12.917 | 88401               | 18.533 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4  
IS2 (NPT) = Naphthalene-d8  
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L916Lab File ID (Standard): V021102Date Analyzed: 02/11/96Instrument ID: 4500VTime Analyzed: 0941

|                         | IS4 (PHN) |        | IS5 (CRY) |        | IS6 (PRY) |        |
|-------------------------|-----------|--------|-----------|--------|-----------|--------|
|                         | AREA #    | RT     | AREA #    | RT     | AREA #    | RT     |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| 12 HOUR STD             | 110253    | 23.183 | 74447     | 29.383 | 59131     | 33.267 |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| UPPER LIMIT             | 220506    | 23.68  | 148894    | 29.88  | 118262    | 33.77  |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| LOWER LIMIT             | 55127     | 22.68  | 37224     | 28.88  | 29566     | 32.77  |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.    |           |        |           |        |           |        |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| 01 AFTOUT-EXP/SV-R1-CND | 154214    | 23.167 | 101178    | 29.433 | 96692     | 33.317 |
| 02 IN/OUT-EXP/SV-SB-CND | 162166    | 23.183 | 134376    | 29.433 | 112177    | 33.300 |
| 03 AFTOUT-EXP/SV-R1-FB  | 155324    | 23.183 | 127222    | 29.417 | 107680    | 33.317 |
| 04 AFTOUT-EXP/SV-R1-FX  | 162708    | 23.183 | 131866    | 29.400 | 104422    | 33.283 |
| 05 IN/OUT-EXP/SV-SB-FX  | 147418    | 23.167 | 106408    | 29.350 | 88164     | 33.233 |
| 06 SBLKSOLE0209-MB1     | 106581    | 23.200 | 102250    | 29.450 | 86605     | 33.350 |
| 07 SBLKSOLE0209-MB1 BS  | 138053    | 23.167 | 120368    | 29.333 | 103835    | 33.217 |
| 08 SBLKSOLE0209-MB1 BSD | 138599    | 23.167 | 128902    | 29.367 | 110335    | 33.267 |

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L916Lab File ID (Standard): V021208Date Analyzed: 02/12/96Instrument ID: 4500VTime Analyzed: 1824

|                         | IS1 (DCB) |       | IS2 (NPT) |        | IS3 (ANT) |        |
|-------------------------|-----------|-------|-----------|--------|-----------|--------|
|                         | AREA      | # RT  | AREA      | # RT   | AREA      | # RT   |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| 12 HOUR STD             | 19691     | 9.050 | 82475     | 12.917 | 50959     | 18.500 |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| UPPER LIMIT             | 39382     | 9.55  | 164950    | 13.42  | 101918    | 19.00  |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| LOWER LIMIT             | 9846      | 8.55  | 41238     | 12.42  | 25480     | 18.00  |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.    |           |       |           |        |           |        |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| 01 IN/OUT-EXP/SV-SB-ACE | 21604     | 8.933 | 79463     | 12.883 | 56795     | 18.500 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L916Lab File ID (Standard): V021208Date Analyzed: 02/12/96Instrument ID: 4500VTime Analyzed: 1824

|                         | IS4 (PHN) |       | RT     | IS5 (CRY) |       | RT     | IS6 (PRY) |        |
|-------------------------|-----------|-------|--------|-----------|-------|--------|-----------|--------|
|                         | AREA      | #     |        | AREA      | #     |        | AREA      | #      |
| =====                   | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| 12 HOUR STD             | 77240     |       | 23.133 | 59629     |       | 29.467 | 49011     | 33.383 |
| =====                   | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| UPPER LIMIT             | 154480    |       | 23.63  | 119258    |       | 29.97  | 98022     | 33.88  |
| =====                   | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| LOWER LIMIT             | 38620     |       | 22.63  | 29815     |       | 28.97  | 24506     | 32.88  |
| =====                   | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.    |           |       |        |           |       |        |           |        |
| =====                   | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| 01 IN/OUT-EXP/SV-SB-ACE | 97411     |       | 23.150 | 82588     |       | 29.433 | 73199     | 33.317 |

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L916Lab File ID (Standard): V021702Date Analyzed: 02/17/96Instrument ID: 4500VTime Analyzed: 0923

|                         | IS1 (DCB) |       | IS2 (NPT) |        | IS3 (ANT) |        |
|-------------------------|-----------|-------|-----------|--------|-----------|--------|
|                         | AREA #    | RT    | AREA #    | RT     | AREA #    | RT     |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| 12 HOUR STD             | 15343     | 9.033 | 79377     | 12.933 | 55942     | 18.517 |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| UPPER LIMIT             | 30686     | 9.53  | 158754    | 13.43  | 111884    | 19.02  |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| LOWER LIMIT             | 7672      | 8.53  | 39689     | 12.43  | 27971     | 18.02  |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.    |           |       |           |        |           |        |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| 01 AFTIN-EXP-R1-CND     | 21150     | 8.950 | 99674     | 12.900 | 67929     | 18.517 |
| 02 AFTIN-EXP-R1MS-CND   | 29984     | 8.950 | 118283    | 12.883 | 76106     | 18.500 |
| 03 AFTIN-EXP-R1-FB      | 20986     | 8.950 | 104086    | 12.900 | 72354     | 18.517 |
| 04 AFTIN-EXP-R1-FX      | 38246*    | 8.950 | 153710    | 12.900 | 89695     | 18.500 |
| 05 AFTIN-EXP-R1MS-FB    | 32409*    | 8.933 | 122007    | 12.883 | 80825     | 18.517 |
| 06 AFTIN-EXP-R1MS-FX    | 27908     | 8.933 | 106449    | 12.883 | 77833     | 18.500 |
| 07 SBLKSXLE0236-MB1     | 16389     | 9.050 | 92732     | 12.933 | 66762     | 18.500 |
| 08 SBLKSXLE0236-MB1 BS  | 18152     | 8.950 | 97286     | 12.900 | 67158     | 18.500 |
| 09 SBLKSXLE0236-MB1 BSD | 20937     | 8.933 | 110507    | 12.883 | 74066     | 18.500 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4  
 IS2 (NPT) = Naphthalene-d8  
 IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L916Lab File ID (Standard): V021702Date Analyzed: 02/17/96Instrument ID: 4500VTime Analyzed: 0923

|                         | IS4 (PHN) |        | IS5 (CRY) |        | IS6 (PRY) |        |
|-------------------------|-----------|--------|-----------|--------|-----------|--------|
|                         | AREA      | # RT   | AREA      | # RT   | AREA      | # RT   |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| 12 HOUR STD             | 99241     | 23.150 | 90900     | 29.350 | 70658     | 33.217 |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| UPPER LIMIT             | 198482    | 23.65  | 181800    | 29.85  | 141316    | 33.72  |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| LOWER LIMIT             | 49621     | 22.65  | 45450     | 28.85  | 35329     | 32.72  |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.    |           |        |           |        |           |        |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| 01 AFTIN-EXP-R1-CND     | 111663    | 23.183 | 104726    | 29.350 | 112428    | 33.233 |
| 02 AFTIN-EXP-R1MS-CND   | 119173    | 23.167 | 129699    | 29.367 | 131748    | 33.250 |
| 03 AFTIN-EXP-R1-FB      | 114352    | 23.183 | 118646    | 29.367 | 120693    | 33.250 |
| 04 AFTIN-EXP-R1-FX      | 137779    | 23.167 | 149717    | 29.367 | 157917*   | 33.233 |
| 05 AFTIN-EXP-R1MS-FB    | 133030    | 23.167 | 131807    | 29.367 | 127763    | 33.250 |
| 06 AFTIN-EXP-R1MS-FX    | 126558    | 23.150 | 127454    | 29.333 | 132752    | 33.217 |
| 07 SBLKSXLE0236-MB1     | 102014    | 23.150 | 110707    | 29.400 | 112424    | 33.267 |
| 08 SBLKSXLE0236-MB1 BS  | 104483    | 23.167 | 110278    | 29.383 | 112934    | 33.267 |
| 09 SBLKSXLE0236-MB1 BSD | 113166    | 23.150 | 126026    | 29.417 | 123967    | 33.300 |

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk

| Compounds                 | QUANT SIG<br>MASS | RT | EXP RT | REL RT | RESPONSE               | CONCENTRATIONS       |                  |
|---------------------------|-------------------|----|--------|--------|------------------------|----------------------|------------------|
|                           |                   |    |        |        |                        | ON-COLUMN<br>(UG/ML) | FINAL<br>(UG/KG) |
| =====                     | =====             | == | =====  | =====  | =====                  | =====                | =====            |
| 79 Chrysene               | 228.00            |    |        |        | Compound Not Detected. |                      |                  |
| 80 Di-n-Octylphthalate    | 149.00            |    |        |        | Compound Not Detected. |                      |                  |
| 81 Benzo(b)fluoranthene   | 252.00            |    |        |        | Compound Not Detected. |                      |                  |
| 82 Benzo(k)fluoranthene   | 252.00            |    |        |        | Compound Not Detected. |                      |                  |
| 83 Benzo(a)pyrene         | 252.00            |    |        |        | Compound Not Detected. |                      |                  |
| 84 Indeno(1,2,3-cd)pyrene | 276.00            |    |        |        | Compound Not Detected. |                      |                  |
| 85 Dibenzo(a,h)anthracene | 278.00            |    |        |        | Compound Not Detected. |                      |                  |
| 86 Benzo(g,h,i)perylene   | 276.00            |    |        |        | Compound Not Detected. |                      |                  |

DAK  
2/19/96



## **ADDITIONAL DOCUMENTATION**

## SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 02/09/96

Extraction Batch No: 96LE0209

Analyst: DW

Method: SEPF

Test: 0625

Cleanup Date:

Analyst:

Client: COE-HOT GAS

LIMS Report Date: 02/15/96

Solvent: DCM

Adsorbent:

| Sample No:            | Client Name          | pH     | Initial Surr. | Spike | Final | Split | GPC        | C/D    |
|-----------------------|----------------------|--------|---------------|-------|-------|-------|------------|--------|
|                       | Client ID            | WT/VOL | Mult.         | Mult. | VOL   | Mult. | Y/N Solids | FACTOR |
| 9602L916- COE-HOT GAS |                      |        |               |       |       |       |            |        |
| 004 H                 | AFTOUT-EXP/SV-R1-CND |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 006 H                 | IN/OUT-EXP/SV-SB-ACE |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 009 H                 | IN/OUT-EXP/SV-SB-CND |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 020 H                 | AFTOUT-EXP/SV-R1-FB  |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 021 H                 | AFTOUT-EXP/SV-R1-FX  |        | 25.0          | 2.0   |       | 12.5  | N          | 25.0   |
| 022 H                 | IN/OUT-EXP/SV-SB-FX  |        | 25.0          | 2.0   |       | 12.5  | N          | 25.0   |
| 9602L963- COE-HOT GAS |                      |        |               |       |       |       |            |        |
| 004 H                 | AFTOUT-EXPLSV-R2COMP |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 009 H                 | AFTOUT-EXPLSV-R3COND |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 014 H                 | AFTOUT-EXPLSV-BTCOND |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 026 H                 | AFTOUT-EXPLSV-R2-FB  |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 027 H                 | AFTOUT-EXPLSV-R2-FX  |        | 25.0          | 2.0   |       | 12.5  | N          | 25.0   |
| 028 H                 | AFTOUT-EXPLSV-R3-FB  |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 029 H                 | AFTOUT-EXPLSV-R3-FX  |        | 25.0          | 2.0   |       | 12.5  | N          | 25.0   |
| 030 H                 | AFTOUT-EXPLSV-BT-FB  |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 031 H                 | AFTOUT-EXPLSV-BT-FX  |        | 25.0          | 2.0   |       | 12.5  | N          | 25.0   |
| 96LE0209-MB1 H        | SBKSO                |        | 2.5           | 2.0   |       | 1.25  | N          | 2.5    |
| 96LE0209-MB1 HS       | SBKSO                |        | 2.5           | 2.5   |       | 1.25  | N          | 2.5    |
| 96LE0209-MB1 HT       | SBKSO                |        | 2.5           | 2.5   |       | 1.25  | N          | 2.5    |

## Comments:

Surrogate: 500 UL ESU 71A @ 100/200 UG/ML

Spike: 500 UL EMS 28 @ 100/200 UG/ML

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time       | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------------|---------------------|
|                      |                 |           | C. Taylor   | 1809<br>2/15/96 | "permission"        |

surrogate,  
methylmercury  
& GPC for blanks-

## SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 02/09/96      Extraction Batch No: 96LE0209      Analyst: DW      Method: SEPF  
 Test: 0625      Cleanup Date:      Analyst:      Client: COE-HOT GAS

Adsorbent:

Solvent: DCM

LIMS Report Date: 02/14/96

| Sample No:            | Client Name          | PH     | Initial Surr. | Spike | Final | Split | GPC | C/D    |
|-----------------------|----------------------|--------|---------------|-------|-------|-------|-----|--------|
|                       | Client ID            | WT/VOL | Mult.         | Mult. | VOL   | Mult. | Y/N | Solids |
|                       |                      |        |               |       |       |       |     | FACTOR |
| 9602L916- COE-HOT GAS |                      |        |               |       |       |       |     |        |
| 004 H                 | AFTOUT-EXP/SV-R1-CND |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 006 H                 | IN/OUT-EXP/SV-SB-ACE |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 009 H                 | IN/OUT-EXP/SV-SB-CND |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 020 H                 | AFTOUT-EXP/SV-R1-FB  |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 021 H                 | AFTOUT-EXP/SV-R1-FX  |        | 2.5           |       | 2.0   | 12.5  | Y   | 0.00   |
| 022 H                 | IN/OUT-EXP/SV-SB-FX  |        | 2.5           |       | 2.0   | 12.5  | Y   | 0.00   |
| 9602L963- COE-HOT GAS |                      |        |               |       |       |       |     |        |
| 004 H                 | AFTOUT-EXPLSV-R2COMP |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 009 H                 | AFTOUT-EXPLSV-R3COND |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 014 H                 | AFTOUT-EXPLSV-BTCOND |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 026 H                 | AFTOUT-EXPLSV-R2-FB  |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 027 H                 | AFTOUT-EXPLSV-R2-FX  |        | 2.5           |       | 2.0   | 12.5  | Y   | 0.00   |
| 028 H                 | AFTOUT-EXPLSV-R3-FB  |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 029 H                 | AFTOUT-EXPLSV-R3-FX  |        | 2.5           |       | 2.0   | 12.5  | Y   | 0.00   |
| 030 H                 | AFTOUT-EXPLSV-BT-FB  |        | 2.5           |       | 2.0   | 1.25  | Y   | 0.00   |
| 031 H                 | AFTOUT-EXPLSV-BT-FX  |        | 2.5           |       | 2.0   | 12.5  | Y   | 0.00   |
| 96LE0209-MB1 H        | SBLKSO               |        | 2.5           |       | 2.0   | 1.25  | N   | 0.00   |
| 96LE0209-MB1 HS       | SBLKSO               |        | 2.5           | 2.5   | 2.0   | 1.25  | N   | 0.00   |
| 96LE0209-MB1 HT       | SBLKSO               |        | 2.5           | 2.5   | 2.0   | 1.25  | N   | 0.00   |

## Comments:

Surrogate: 500 UL ESU 71A @ 100/200 UG/ML  
 Spike: 500 UL EMS 28 @ 100/200 UG/ML

| Extracts Transferred | Relinquished By | Date Time     | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|---------------|-------------|-----------|---------------------|
| all                  | Dina Osey. m.   | 2/14/96 16:05 | D. Seck     | 2/15/96   | all analyses        |

Roy F. Weston, Inc. Lionville, Lab.

SAMPLE EXTRACTION RECORD

Extract. Date: 02/08/96

Extraction Batch No: 96LLC017

Analyst: GL

Method: \*\*\*\*

Test: 0833

Cleanup Date:

Analyst:

Client: COE-HOT GAS

LIMS Report Date: 02/09/96

Solvent: DCM/ACETONE TO ACN

Adsorbent:

| Sample No:            | Client Name<br>Client ID | pH | Initial Surr.<br>WT/VOL | Spike Final<br>Mult. VOL | Split<br>Mult. | GPC<br>Y/N | Solids<br>FACTOR | C/D  |
|-----------------------|--------------------------|----|-------------------------|--------------------------|----------------|------------|------------------|------|
| 9602L916- COE-HOT GAS |                          |    |                         |                          |                |            |                  |      |
| 006 0                 | IN/OUT-EXP/SV-SB-ACE     | 7  | 1                       | 1.0                      | 10             | 2.0        | N 0.0            | 20.0 |
| 020 0                 | AFTOUT-EXP/SV-R1-FB      | 7  | 1                       | 1.0                      | 10             | 2.0        | N 0.0            | 20.0 |
| 023 0                 | AFTIN-EXP-R1-FB          | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 20.0 |
| 025 0                 | AFTIN-EXP-R1MS-FB        | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 20.0 |
| 9602L963- COE-HOT GAS |                          |    |                         |                          |                |            |                  |      |
| 026 0                 | AFTOUT-EXPLSV-R2-FB      | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 20.0 |
| 028 0                 | AFTOUT-EXPLSV-R3-FB      | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 20.0 |
| 030 0                 | AFTOUT-EXPLSV-BT-FB      | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 20.0 |
| 032 0                 | AFTIN-EXP-R2-FB          | 7  | 1                       | 1.0                      | 10             | 2.0        | N 0.0            | 20.0 |
| 034 0                 | AFTIN-EXP-R3-FB          | 7  | 1                       | 1.0                      | 10             | 2.0        | N 0.0            | 20.0 |
| 96LLC017-MB1 0        | BLK                      | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 20.0 |
| 96LLC017-MB1 0S       | BLK                      | 7  | 1                       | 1.0                      | 10             | 2.0        | N                | 20.0 |

Comments: ALL REQUIRED FILTRATION THROUGH SODIUM SULFATE

Surrogate: 50UL 41024101 1,2-DNB

Spike: 125UL 461129B

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
| N/A                  |                 |           |             |           |                     |

Car 2/9/96

446-447  
223

WESTON®

## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055

Extract Date: 2/7/96 Extraction Batch #: 46 LCC 0.3 SDG File Y/N: N/A  
 Analyst: F. Hagen Test: 330 Method: RSC Solvent: AcN AAPrep: I

| RFW # | (mL)<br>Vol I       | Mtrx | pH | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-------|---------------------|------|----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|
| 1     | Blank (770)         | w    |    | 1                           | 1.0               | 1.0                | 10                   | 2             | N          |
| 2     | Blank Spike (770)   |      |    | 1                           |                   | 1.0                |                      |               |            |
| 3     | 9602L916- C04 (580) |      |    | 1                           |                   |                    |                      |               |            |
| 4     | - C09 (330)         |      |    | 1                           |                   |                    |                      |               |            |
| 5     | - C13* (400)        |      |    | 1                           |                   |                    |                      |               |            |
| 6     | - C18 (210)         |      |    | 1                           |                   |                    |                      |               |            |
| 7     |                     |      |    |                             |                   |                    |                      |               |            |
| 8     |                     |      |    |                             |                   |                    |                      |               |            |
| 9     |                     |      |    |                             |                   |                    |                      |               |            |
| 10    |                     |      |    |                             |                   |                    |                      |               |            |
| 11    |                     |      |    |                             |                   |                    |                      |               |            |
| 12    |                     |      |    |                             |                   |                    |                      |               |            |
| 13    |                     |      |    |                             |                   |                    |                      |               |            |
| 14    |                     |      |    |                             |                   |                    |                      |               |            |
| 15    |                     |      |    |                             |                   |                    |                      |               |            |
| 16    |                     |      |    |                             |                   |                    |                      |               |            |
| 17    |                     |      |    |                             |                   |                    |                      |               |            |
| 18    |                     |      |    |                             |                   |                    |                      |               |            |
| 19    |                     |      |    |                             |                   |                    |                      |               |            |
| 20    |                     |      |    |                             |                   |                    |                      |               |            |
| 21    |                     |      |    |                             |                   |                    |                      |               |            |
| 22    |                     |      |    |                             |                   |                    |                      |               |            |
| 23    |                     |      |    |                             |                   |                    |                      |               |            |
| 24    |                     |      |    |                             |                   |                    |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: N/AEnd time: I

BN Fraction (Date/Time/Initials)

Start time: N/AEnd time: I

## Extraction Information

(Date/Analyst)

Filtration: N/ABoildown: IBlowdown: IGPC Ready: IGPC Cleanup: IGPC #: IAfter GPC Boildown: IAfter GPC Blowdown: I

Acid/Florisil/Alumina Cleanup:

N/APrep Sheet: F. Hagen 2/8/96GPC Lab ID #: N/AFlorisil Lot #: IFlorisil Lab ID #: I

\* For Surr/Spike Mult, refer to  
Table 1 / 2 / 3 (circle one)

COMMENTS: Samples brought to Volume (770mL) w/ DI H<sub>2</sub>O

\* Bright yellow Extract → potentially high tyt Compds

Surrogate: 50 ul 41024097 Spike: 125 ul 4611293 Witness: F. Hagen 2/8/96This Page Reviewed By/Date: F. Hagen 2/8/96 Reviewed Against LIMS By/DATE: F. Hagen 2/8/96

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## LC - GC - GC/MS EXTRACTABLES

Logbook #

5055

Extract Date: 2/7/96 Extraction Batch #: 16LUC014 SDG File Y/N: \_\_\_\_\_Analyst: Schell Test: 2330 Method: Scan Solvent: ACV AAPrep: \_\_\_\_\_

| RFW #            | Mtrx | pH | Initial Wt/Vol (g/mL) | Surr Mult * | Spike Mult * | Final Vol (mL) | Split Mult | GPC Y/N | Acid Fraction or Pest/PCB or LC (Date/Time/Initials) |
|------------------|------|----|-----------------------|-------------|--------------|----------------|------------|---------|------------------------------------------------------|
| 1   9602L916-021 | Air  |    |                       | 10          |              | 100            | 2          | N       | Start time: _____                                    |
| 2   022          |      |    |                       |             |              |                |            |         | End time: _____                                      |
| 3   024          |      |    |                       |             |              |                |            |         | BN Fraction (Date/Time/Initials)                     |
| 4   026          |      |    |                       |             |              |                |            |         | Start time: _____                                    |
| 5   Blank        |      |    |                       |             |              |                |            |         | End time: _____                                      |
| 6   85           |      |    |                       | 10          |              |                |            |         | Extraction Information                               |
| 7                |      |    |                       |             |              |                |            |         | (Date/Analyst)                                       |
| 8                |      |    |                       |             |              |                |            |         | Filtration: _____                                    |
| 9                |      |    |                       |             |              |                |            |         | Boildown: _____                                      |
| 10               |      |    |                       |             |              |                |            |         | Blowdown: _____                                      |
| 11               |      |    |                       |             |              |                |            |         | GPC Ready: _____                                     |
| 12               |      |    |                       |             |              |                |            |         | GPC Cleanup: _____                                   |
| 13               |      |    |                       |             |              |                |            |         | GPC #: _____                                         |
| 14               |      |    |                       |             |              |                |            |         | After GPC Boildown: _____                            |
| 15               |      |    |                       |             |              |                |            |         | After GPC Blowdown: _____                            |
| 16               |      |    |                       |             |              |                |            |         | Acid/Florilil/Alumina Cleanup: _____                 |
| 17               |      |    |                       |             |              |                |            |         | Prep Sheet <u>2/8/96</u>                             |
| 18               |      |    |                       |             |              |                |            |         | GPC Lab ID #: _____                                  |
| 19               |      |    |                       |             |              |                |            |         | Florilil Lot #: _____                                |
| 20               |      |    |                       |             |              |                |            |         | Florilil Lab ID #: _____                             |
| 21               |      |    |                       |             |              |                |            |         |                                                      |
| 22               |      |    |                       |             |              |                |            |         |                                                      |
| 23               |      |    |                       |             |              |                |            |         |                                                      |
| 24               |      |    |                       |             |              |                |            |         |                                                      |

\* For Surr/Spike Mult, refer to Table 1 / 2 / 3 (circle one)

COMMENTS: Composite ~~100~~ + Filter by the above numbered RFW. See COC for original sample ID. 2/7/96

ON: 1550 2/7/96

OFF: 0950 2/8/96

Surrogate: 40.2L 41020716 1.20MB @ 1000 µg/mL Spike: 1.25 mL 4611298 Witness: \_\_\_\_\_

This Page Reviewed By/Date: 2/8/96 Reviewed Against LIMS By/DATE: 2/8/96

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## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055Extract Date: 2/3/96Extraction Batch #: 4111015SDG File Y/N: N/AAnalyst: F/M/96Test: 8330Method: RSOESolvent: ACNAAPrep: I

| RFW # | Vol (mL)             | Mtrx | pH | Initial Wt/Vol (g/mL) | Surr Mult * | Spike Mult * | Final Vol (mL) | Split Mult | GPC Y/N |
|-------|----------------------|------|----|-----------------------|-------------|--------------|----------------|------------|---------|
| 1     | Blank (770)          | W    |    | 1 (770)               | 1           |              | 10             | 2          | N       |
| 2     | Blank Soln (770)     |      |    |                       |             | 1            |                |            |         |
| 3     | 46024963 - 004 (550) |      |    |                       |             |              |                |            |         |
| 4     | - 009 (539)          |      |    |                       |             |              |                |            |         |
| 5     | - 014 (200)          |      |    |                       |             |              |                |            |         |
| 6     | - 019 (70)           |      |    |                       |             |              |                |            |         |
| 7     | - 024 (70)           |      |    |                       |             |              |                |            |         |
| 8     |                      |      |    |                       |             |              |                |            |         |
| 9     |                      |      |    |                       |             |              |                |            |         |
| 10    |                      |      |    |                       |             |              |                |            |         |
| 11    |                      |      |    |                       |             |              |                |            |         |
| 12    |                      |      |    |                       |             |              |                |            |         |
| 13    |                      |      |    |                       |             |              |                |            |         |
| 14    |                      |      |    |                       |             |              |                |            |         |
| 15    |                      |      |    |                       |             |              |                |            |         |
| 16    |                      |      |    |                       |             |              |                |            |         |
| 17    |                      |      |    |                       |             |              |                |            |         |
| 18    |                      |      |    |                       |             |              |                |            |         |
| 19    |                      |      |    |                       |             |              |                |            |         |
| 20    |                      |      |    |                       |             |              |                |            |         |
| 21    |                      |      |    |                       |             |              |                |            |         |
| 22    |                      |      |    |                       |             |              |                |            |         |
| 23    |                      |      |    |                       |             |              |                |            |         |
| 24    |                      |      |    |                       |             |              |                |            |         |

Acid Fraction or Pest/PCB or LC (Date/Time/Initials)

Start time: N/AEnd time: I

BN Fraction (Date/Time/Initials)

Start time: N/AEnd time: I

## Extraction Information

(Date/Analyst)

Filtration: N/ABoildown: IBlowdown: IGPC Ready: IGPC Cleanup: IGPC #: IAfter GPC Boildown: IAfter GPC Blowdown: IAcid/Florisil/Alumina Cleanup: IPrep Sheet: 2/3/96GPC Lab ID #: IFlorisil Lot #: IFlorisil Lab ID #: I

\* For Surr/Spike Mult, refer to Table 1 / 2 / 3 (circle one)

COMMENTS: Samples brought to Volume (770mL) w/ DI H<sub>2</sub>O\* Bright Yellow Extracts possibly high trap compoundsxx Sample 014 produced 20mLs acid after 12 spin followed by additional (250mLs) Solvent waterOnly added 2mLs ACN on 22nd spin. 22 mL EV used for Compound 22 spin.Surrogate: 50 mL 41424009Spike: 125 mL 4611293Witness: 2/3/96This Page Reviewed By/Date: 2/3/96Reviewed Against LIMS By/DATE: 2/3/96

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## LC - GC - GC/MS EXTRACTABLES

Logbook # 555

Extract Date: 2/8/96 Extraction Batch #: 96021963 SDG File Y/N: \_\_\_\_\_  
 Analyst: Schell Test: 8330 Method: SONX Solvent: ACN AAPrep: \_\_\_\_\_

| RFW #                  | Mtrx      | pH | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|------------------------|-----------|----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|
| 1: <u>96021963-027</u> | <u>AN</u> |    |                             | <u>10</u>         |                    | <u>100</u>           | <u>2</u>      | <u>N</u>   |
| 2: <u>029</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 3: <u>031</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 4: <u>033</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 5: <u>035</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 6: <u>Blank</u>        | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 7: <u>BS</u>           | <u>↓</u>  |    |                             | <u>↓</u>          | <u>10</u>          | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 8:                     |           |    |                             |                   |                    |                      |               |            |
| 9:                     |           |    |                             |                   |                    |                      |               |            |
| 10:                    |           |    |                             |                   |                    |                      |               |            |
| 11:                    |           |    |                             |                   |                    |                      |               |            |
| 12:                    |           |    |                             |                   |                    |                      |               |            |
| 13:                    |           |    |                             |                   |                    |                      |               |            |
| 14:                    |           |    |                             |                   |                    |                      |               |            |
| 15:                    |           |    |                             |                   |                    |                      |               |            |
| 16:                    |           |    |                             |                   |                    |                      |               |            |
| 17:                    |           |    |                             |                   |                    |                      |               |            |
| 18:                    |           |    |                             |                   |                    |                      |               |            |
| 19:                    |           |    |                             |                   |                    |                      |               |            |
| 20:                    |           |    |                             |                   |                    |                      |               |            |
| 21:                    |           |    |                             |                   |                    |                      |               |            |
| 22:                    |           |    |                             |                   |                    |                      |               |            |
| 23:                    |           |    |                             |                   |                    |                      |               |            |
| 24:                    |           |    |                             |                   |                    |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

## Extraction Information

(Date/Analyst)

Filtration: \_\_\_\_\_

Boildown: \_\_\_\_\_

Blowdown: \_\_\_\_\_

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Boildown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup: \_\_\_\_\_

Prep Sheet: 2/8/96

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
Table 1 / 2 / 3 (circle one)

COMMENTS: KAO + Filter CompositesON 1430 2/8/96OFF 0830 2/8/96Surrogate: 40uL 4/624716 120NB0100% Spike: 1.25mL 461129B Witness: \_\_\_\_\_This Page Reviewed By/Date: 2/8/96 Reviewed Against LIMS By/DATE: 2/8/96



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## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055

Extract Date: 2/8/96 Extraction Batch #: 96LLC017 SDG File Y/N: \_\_\_\_\_  
 Analyst: G. Heuer Test: 08330 Method: KD Solvent: ACN AAPrep: 2/8/96

| RFW # | Mtrx          | pH  | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N | Acid Fraction or Pest/PCB<br>or LC (Date/Time/Initials)                                                                                                                                                                                                         |
|-------|---------------|-----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | 9602L 916-006 | Sdo | 370                         | 1                 |                    | 10                   | 2             | W          | Start time: _____<br>End time: _____                                                                                                                                                                                                                            |
| 2     | -020          |     | 210                         |                   |                    |                      |               |            | BN Fraction (Date/Time/Initials)<br>Start time: _____<br>End time: _____                                                                                                                                                                                        |
| 3     | -023          |     | 240                         |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 4     | -025          |     | 220                         |                   |                    |                      |               |            | Extraction Information<br>(Date/Analyst)<br>Filtration: _____<br>Boildown: _____<br>Blowdown: _____<br>GPC Ready: _____<br>GPC Cleanup: _____<br>GPC #: _____<br>After GPC Boildown: _____<br>After GPC Blowdown: _____<br>Acid/Florisil/Alumina Cleanup: _____ |
| 5     | 9602L 963-026 |     | 240                         |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 6     | -028          |     | 210                         |                   |                    |                      |               |            | Prep Sheet: <u>2/9/96 Gm</u><br>GPC Lab ID #: _____<br>Florisil Lot #: _____<br>Florisil Lab ID #: _____<br>* For Surr/Spike Mult, refer to<br>Table 1 / 2 / 3 (circle one)                                                                                     |
| 7     | -030          |     | 180                         |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 8     | -032          |     | 235                         |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 9     | -034          |     | 325                         |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 10    | Blank         |     | 200                         |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 11    | Blank spike   |     | 200                         |                   | 1                  |                      |               |            |                                                                                                                                                                                                                                                                 |
| 12    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 13    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 14    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 15    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 16    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 17    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 18    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 19    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 20    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 21    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 22    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 23    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |
| 24    |               |     |                             |                   |                    |                      |               |            |                                                                                                                                                                                                                                                                 |

COMMENTS: DCM/ACETONE SD-SD used for B & BS

All initial volumes to be logged in as 1 for total mg.

Water in all samples requiring Sodium Sulfate filtering

Surrogate: SDut 410240 1/2000 Spike: 461129 B 125 uL Witness: \_\_\_\_\_  
 This Page Reviewed By/Date: 2/2/96 Reviewed Against LIMS By/DATE: 2/2/96

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## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5158

Extract Date: 2/9/96 Extraction Batch #: 96LE0209 SDG File Y/N: ARM 2/12/96  
 Analyst: AW Test: OG25H Method: Sept. Solvent: DCM AAPrep: D.O 2/9/96

| RFW # | Mtrx         | pH  | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-------|--------------|-----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|
| 1     | 9602L916-004 | N/A | N/A                         | 2.5               |                    | 2.0                  | 1.25          | N          |
| 2     | -006         |     |                             |                   |                    |                      |               |            |
| 3     | -009         |     |                             |                   |                    |                      |               |            |
| 4     | -020         |     |                             |                   |                    |                      |               |            |
| 5     | -021         |     |                             | 2.5               |                    |                      | 12.5          |            |
| 6     | -022         |     |                             |                   |                    |                      |               |            |
| 7     | 9602L963-004 |     |                             | 2.5               |                    |                      | 1.25          |            |
| 8     | -009         |     |                             |                   |                    |                      |               |            |
| 9     | -014         |     |                             |                   |                    |                      |               |            |
| 10    | -026         |     |                             |                   |                    |                      |               |            |
| 11    | -027         |     |                             | 2.5               |                    |                      | 12.5          |            |
| 12    | -028         |     |                             | 2.5               |                    |                      | 1.25          |            |
| 13    | -029         |     |                             | 2.5               |                    |                      | 12.5          |            |
| 14    | -030         |     |                             | 2.5               |                    |                      | 1.25          |            |
| 15    | -031         |     |                             | 2.5               |                    |                      | 12.5          |            |
| 16    | Blank        | 7.0 | 1000                        | 2.5               |                    |                      | 1.25          |            |
| 17    | BS           |     |                             |                   | 2.5                |                      |               |            |
| 18    | BSD          |     |                             |                   |                    |                      |               |            |
| 19    |              |     |                             |                   |                    |                      |               |            |
| 20    |              |     |                             |                   |                    |                      |               |            |
| 21    |              |     |                             |                   |                    |                      |               |            |
| 22    |              |     |                             |                   |                    |                      |               |            |
| 23    |              |     |                             |                   |                    |                      |               |            |
| 24    |              |     |                             |                   |                    |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

## Extraction Information

(Date/Analyst)

Filtration: 2/9/96 AW

Boildown: \_\_\_\_\_

Blowdown: 2/16/96 ARM

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Boildown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup: \_\_\_\_\_

Prep Sheet: ARM 2/10/96

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
Table 1/2/3 (circle one)

COMMENTS: 4 mL of extract<sup>was</sup> delivered into 200 mL of DI H<sub>2</sub>O in septunel.  
Revision of the prepsheet, reflecting 4mL aliquots taken from  
10mL and 100mL F.V.s of explosive extracts, was performed  
on 2/14/96 by D.O. per ID instruction D.O. 2/14/96.

Surrogate: 500uL 2/88 ESU-71A 33N750 Spike: 500uL 2/88 EMS-28 Witness: \_\_\_\_\_  
 This Page Reviewed By/Date: ARM 2/16/96 Reviewed Against LIMS By/DATE: ARM 2/16/96

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## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5158

Extract Date: 2/14/96 Extraction Batch #: 96LE 0236 SDG File #/YN: AMM 2/14/96  
 Analyst: MY Test: 0625H Method: SEPT Solvent: DCM AAPrep: AMM 2/15/96

| RFW # | Mtrx          | pH  | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult | Spike<br>Mult | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-------|---------------|-----|-----------------------------|--------------|---------------|----------------------|---------------|------------|
| 1     | 9602 L916-013 | N/A | N/A                         | 1.0          |               | 2.0                  | 1.25          | N          |
| 2     | 018           |     |                             | 2.5          |               |                      | 1.25          |            |
| 3     | 024           |     |                             | 2.5          |               |                      | 12.5          |            |
| 4     | 026           |     |                             | 2.5          |               |                      | 12.5          |            |
| 5     | 023           |     |                             | 2.5          |               |                      | 1.25          |            |
| 6     | 025           |     |                             | 2.5          |               |                      | 1.25          |            |
| 7     | 963-019       |     |                             | 1            |               |                      | 1.25          |            |
| 8     | 024           |     |                             |              |               |                      | 1.25          |            |
| 9     | 032           |     |                             | 2.5          |               |                      | 12.5          |            |
| 10    | 033           |     |                             | 2.5          |               |                      | 1.25          |            |
| 11    | 034           |     |                             | 2.5          |               |                      | 12.5          |            |
| 12    | 035           |     |                             | 2.5          |               |                      | 1.25          |            |
| 13    | Blank         |     |                             | 2.5          |               |                      | 1.25          |            |
| 14    | B3            |     |                             | 1            | 0.25          |                      | 1.25          |            |
| 15    | BSD           |     |                             | 1            | 0.25          |                      | 1.25          |            |
| 16    |               |     |                             |              |               | D.O. 2/14/96         |               |            |
| 17    |               |     |                             |              |               |                      |               |            |
| 18    |               |     |                             |              |               |                      |               |            |
| 19    |               |     |                             |              |               |                      |               |            |
| 20    |               |     |                             |              |               |                      |               |            |
| 21    |               |     |                             |              |               |                      |               |            |
| 22    |               |     |                             |              |               |                      |               |            |
| 23    |               |     |                             |              |               |                      |               |            |
| 24    |               |     |                             |              |               |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

## Extraction Information

(Date/Analyst)

Filtration: 2/14/96 MYBolidown: 2/14/96 DNBlowdown: 2/15/96 D.O.

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Bolidown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup: \_\_\_\_\_

Prep Sheet: D.O. 2/15/96

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
Table 2/3 (circle one)

## COMMENTS:

pH & Initial Volume was not applicable according to  
Schedule. MY 2/14/96 samples are air - therefore  
pH and init. vol. - not needed. D.O. 2/14/96.

\* Surr. and spike multiplier changed to accom. GC/MS SUDA calculations per S.Du

33117501  
 Surrogate: 500/11/ESL/71A @ 100/200V7/nl Spike: 500/11/ESL/28 33117302 @ 100/200V7/nl Witness: MY

This Page Reviewed By/Date: D.O. 2/15/96 Reviewed Against LIMS By/DATE: AMM 2/16/96

**END OF DATA PACKAGE**

455

~~447~~

Roy F. Weston, Inc. - Lionville Laboratory  
BNA ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L963

| CLIENT ID            | RFW # | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------------|-------|-----|----------|------------|-----------|----------|
| AFTOUT-EXPLSV-R2COMP | 004   | AI  | 96LE0209 | 02/02/96   | 02/09/96  | 02/11/96 |
| AFTOUT-EXPLSV-R3COND | 009   | AI  | 96LE0209 | 02/04/96   | 02/09/96  | 02/11/96 |
| AFTOUT-EXPLSV-BTCOND | 014   | AI  | 96LE0209 | 02/04/96   | 02/09/96  | 02/11/96 |
| AFTIN-EXP-R2-COND    | 019   | AI  | 96LE0236 | 02/02/96   | 02/14/96  | 02/20/96 |
| AFTIN-EXP-R3-COND    | 024   | AI  | 96LE0236 | 02/04/96   | 02/14/96  | 02/20/96 |
| AFTOUT-EXPLSV-R2-FB  | 026   | AI  | 96LE0209 | 02/02/96   | 02/09/96  | 02/13/96 |
| AFTOUT-EXPLSV-R2-FX  | 027   | AI  | 96LE0209 | 02/02/96   | 02/09/96  | 02/13/96 |
| AFTOUT-EXPLSV-R3-FB  | 028   | AI  | 96LE0209 | 02/04/96   | 02/09/96  | 02/13/96 |
| AFTOUT-EXPLSV-R3-FX  | 029   | AI  | 96LE0209 | 02/04/96   | 02/09/96  | 02/13/96 |
| AFTOUT-EXPLSV-BT-FB  | 030   | AI  | 96LE0209 | 02/04/96   | 02/09/96  | 02/13/96 |
| AFTOUT-EXPLSV-BT-FX  | 031   | AI  | 96LE0209 | 02/04/96   | 02/09/96  | 02/13/96 |
| AFTIN-EXP-R2-FB      | 032   | AI  | 96LE0236 | 02/02/96   | 02/14/96  | 02/17/96 |
| AFTIN-EXP-R2-FX      | 033   | AI  | 96LE0236 | 02/02/96   | 02/14/96  | 02/19/96 |
| AFTIN-EXP-R3-FB      | 034   | AI  | 96LE0236 | 02/04/96   | 02/14/96  | 02/19/96 |
| AFTIN-EXP-R3-FX      | 035   | AI  | 96LE0236 | 02/04/96   | 02/14/96  | 02/19/96 |

LAB QC:

|        |         |    |          |     |          |          |
|--------|---------|----|----------|-----|----------|----------|
| SBLKSO | MB1     | AI | 96LE0209 | N/A | 02/09/96 | 02/11/96 |
| SBLKSO | MB1 BS  | AI | 96LE0209 | N/A | 02/09/96 | 02/11/96 |
| SBLKSO | MB1 BSD | AI | 96LE0209 | N/A | 02/09/96 | 02/11/96 |
| SBLKSX | MB1     | AI | 96LE0236 | N/A | 02/14/96 | 02/17/96 |
| SBLKSX | MB1 BS  | AI | 96LE0236 | N/A | 02/14/96 | 02/17/96 |
| SBLKSX | MB1 BSD | AI | 96LE0236 | N/A | 02/14/96 | 02/17/96 |

*Handwritten:* OK from CCI

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| 3. Raw Data                                                  |         |
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| b. Quantitation Report(s)                                    |         |
| c. HSL Mass Spectra                                          |         |
| d. GC/MS Library Search for TIC                              |         |
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## **CHAIN OF CUSTODY**









# Custody Transfer Record/Lab Work Request

[illegible]

# WESTON® Sample Discrepancy Report (SDR)

SDR #: 96m5080

Initiator: Deb Feick  
Date: 2/14/96  
Client: CDE-Hot Gas

RFW Batch: 9602L916, 9603  
Samples: see below  
Method: SWB46/MCAWW/CLP/

Parameter: 025H  
Matrix: Air Water  
Prep Batch: 95LE0209

## 1. Reason for SDR

- a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C  
☐ Transcription Error ☐ Wrong Test Code ☐ Other \_\_\_\_\_
- b. General Discrepancy  
☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: \_\_\_\_\_

## c. QC Problem (Include all relevant specific results; attach data if necessary)

*FYI - due to initial extraction for HPLC with Acetonitrile the following samples had poor chromatography: 9602L916-004, 009, 021, 022; 9602L916-004, 009, 014, 027, 029, 031. Each internal surrogate in these samples was split into 20.3 peaks. See attached.*

## 2. Known or Probable Causes(s)

## 3. Discussion and Proposed Action

Other Description:

- ☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

- ① Sum split peaks and report total % recovery  
② Bring up remaining extract in a volume of DCM and re-concentrate & reanalyze.

## 4. Project Manager Instructions...signature/date: 2/14/96

- ☒ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☐ Client Contacted:  
Date/Person: \_\_\_\_\_  
☐ Add  
☐ Cancel

- Concur with ①.  
② Attempt to exchange samples 916-004, 021 (and 020 if necessary) to DCM only and reanalyze. Please have Kevin Meenan talk to OSPU on

## 5. Final Action...signature/date: \_\_\_\_\_

Other Explanation:

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☐ Included in Case Narrative  
☐ Hard Copy COC Revised  
☐ Electronic COC Revised  
☐ EDD Corrections Completed

*the procedure. 2/24/96 reported the "exchanged" extracts for samples 9602L916-004 and 9602L916-021 as reanalyses for confirmation. noted in narrative 2/24/96*

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR  
☒ Initiator Deb Feick  
☒ Lab Manager: J. Michael Taylor  
☒ Project Mgr: Kelly Baker  
☒ Section Mgr: Sier/Durkey/Daniels  
☒ QA Section Mgr: Dianne Therry  
☒ QA File: Feldman/Racioppi/Shaffer  
☒ Data Reporting: Som-Basuthakur  
☒ Sample Prep: Osei-Mensah/Swisher

Route Distribution of Completed SDR  
☐ Metals: Reichner/Doughty  
☐ Inorganic: Perrone/Leonards  
☐ GC/LC: Jarvis/Skrzat/Schnell  
☐ MS: LeMin/McIntyre/Taylor/Kasdras/Steele  
☐ Log-in: Geiger  
☐ EDD: Miller  
☐ Admin: Brewer/Keehn/Edgington  
☐ Other: \_\_\_\_\_

Initiator: K. Baker RFW Batch: 9602L963, 916  
 Date: 2-9-96 Samples: see below  
 Client: COE-HOT GAS Method: SW846 MCAWW CLP

Parameter: SVCA  
 Matrix: AIR  
 Prep Batch: \_\_\_\_\_

## 1. Reason for SDR

- a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C  
☐ Transcription Error ☐ Wrong Test Code ☐ Other \_\_\_\_\_
- b. General Discrepancy  
☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: \_\_\_\_\_

## c. QC Problem (Include all relevant specific results; attach data if necessary)

Add 0625 to the following samples.  
 9602L916-13, 18, 23, 24, 25, 26  
 9602L963-19, 24, 32, 33, 34, 35

## 2. Known or Probable Causes(s)

## 3. Discussion and Proposed Action

Other Description:

- ☒ Re-log  
☐ Entire Batch  
☒ Following Samples: see above  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

## 4. Project Manager Instructions...signature/date:

K. Baker 2/9/96

- ☒ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☒ Client Contacted:  
 Date/Person Colleen Parker 2/9/96  
☐ Add  
☐ Cancel

## 5. Final Action...signature/date:

9602L916

Other Explanation:

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☐ Included in Case Narrative  
☒ Hard Copy COC Revised  
☒ Electronic COC Revised  
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR  
☐ ☒ Initiator  
☐ ☒ Lab Manager: J. Michael Taylor  
☐ ☒ Project Mgr:  
☐ ☒ Section Mgr: Siery/Durke/Daniels  
☐ ☒ QA Section Mgr: Dianne Therry  
☐ ☒ QA File: Feldman/Racioppi/Shaffer  
☐ ☒ Data Reporting: Som Basuthakur  
☐ ☐ Sample Prep: Osei-Mensah/Swisher

Route Distribution of Completed SDR  
☐ ☐ Metals: Reichner/Doughty  
☐ ☐ Inorganic: Perrone/Leonards  
☐ ☐ GC/LC: Jarvis/Skrzat/Schnell  
☐ ☐ MS: LeMin/McIntyre/Taylor/Kasdras/Steele  
☐ ☐ Log-in: Geiger  
☐ ☐ EDD: Miller  
☐ ☐ Admin: Brewer/Keehn/Edgington  
☐ ☐ Other: \_\_\_\_\_

# WESTON Sample Discrepancy Report (SDR)

SDR #: 70010070

Initiator: K. Baker

RFW Batch: 9602L916, 943

Parameter: ALL

Date: 2-14-96

Samples: ALL

Matrix: AIR

Client: AAAP Hot Gas

Method: SW846/MCAWW/CLP

Prep Batch: \_\_\_\_\_

## 1. Reason for SDR

- a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C.  
☐ Transcription Error ☐ Wrong Test Code ☒ Other Wrong matrix
- b. General Discrepancy  
☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)....signature/date: \_\_\_\_\_

## c. QC Problem (Include all relevant specific results; attach data if necessary)

*ALL matrices should be air.  
 please change all samples listed as water to air.*

## 2. Known or Probable Causes(s)

## 3. Discussion and Proposed Action

Other Description:

- ☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

*X change matrix where appropriate  
 to air.*

## 4. Project Manager Instructions....signature/date:

- ☒ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☐ Client Contacted:  
 Date/Person \_\_\_\_\_  
☐ Add  
☐ Cancel

## 5. Final Action....signature/date:

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☐ Included in Case Narrative  
☒ Hard Copy COC Revised  
☒ Electronic COC Revised  
☐ EDD Corrections Completed

Other Explanation:

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

| Route                               | Distribution of Completed SDR     | Route                    | Distribution of Completed SDR            |
|-------------------------------------|-----------------------------------|--------------------------|------------------------------------------|
| <input checked="" type="checkbox"/> | Initiator                         | <input type="checkbox"/> | Metals: Reichner/Doughty                 |
| <input checked="" type="checkbox"/> | Lab Manager: J. Michael Taylor    | <input type="checkbox"/> | Inorganic: Perrone/Leonards              |
| <input checked="" type="checkbox"/> | Project Mgr:                      | <input type="checkbox"/> | GC/LC: Jarvis/Skrzat/Schnell             |
| <input checked="" type="checkbox"/> | Section Mgr: Siery/Durke/Daniels  | <input type="checkbox"/> | MS: LeMin/McIntyre/Taylor/Kasdras/Steele |
| <input checked="" type="checkbox"/> | QA Section Mgr: Dianne Therry     | <input type="checkbox"/> | Log-in: Geiger                           |
| <input checked="" type="checkbox"/> | QA File: Feldman/Racioppi/Shaffer | <input type="checkbox"/> | EDD: Miller                              |
| <input checked="" type="checkbox"/> | Data Reporting: Som Basuthakur    | <input type="checkbox"/> | Admin: Brewer/Keehn/Edgington            |
| <input type="checkbox"/>            | Sample Prep: Osei-Mensah/Swisher  | <input type="checkbox"/> | Other: _____                             |

**WESTON**

## **DATA SUMMARY**

012

~~010~~

# Roy F. Weston, Inc. Lionville Laboratory

Report Date: 02/20/96 15:31

Semivolatiles by GC/MS, HSL List

Work Order: 02281012012

Page: 1a

RFW Batch Number: 9602L963

Client: COE-HOT GAS

Cust ID: AFTOUT-EXPLS AFTOUT-EXPLS AFTIN-EXP-R2 AFTIN-EXP-R3 AFTOUT-EXPLS

V-R2COMP

V-R3COND

V-BTCOND

-COND

-COND

V-R2-FB

RFW#:

004

Matrix:

AIR

D.F.:

2.50

Units:

total ug

Sample

Information

| Surrogate                    | 67 | 61 | 65 | 61 | 61 | 63  | 74 |
|------------------------------|----|----|----|----|----|-----|----|
| Nitrobenzene-d5              | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 2-Fluorobiphenyl             | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| p-Terphenyl-d14              | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| Phenol-d5                    | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 2-Fluorophenol               | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 2,4,6-Tribromophenol         | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| bis(2-Chloroethyl) ether     | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 2-Chlorophenol               | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 1,3-Dichlorobenzene          | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 1,4-Dichlorobenzene          | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| Benzyl alcohol               | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 1,2-Dichlorobenzene          | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 2-Methylphenol               | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| bis(2-Chloroisopropyl) ether | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 4-Methylphenol               | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| N-Nitroso-Di-n-propylamine   | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| Hexachloroethane             | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| Nitrobenzene                 | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| Isophorone                   | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 2-Nitrophenol                | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 2,4-Dimethylphenol           | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| Benzoic acid                 | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| bis(2-Chloroethoxy) methane  | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 2,4-Dichlorophenol           | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 1,2,4-Trichlorobenzene       | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| Naphthalene                  | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 4-Chloroaniline              | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| Hexachlorobutadiene          | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 4-Chloro-3-methylphenol      | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| 2-Methylnaphthalene          | 25 | 25 | 25 | 25 | 25 | 120 | 25 |
| Hexachlorocyclopentadiene    | 25 | 25 | 25 | 25 | 25 | 120 | 25 |

\*= Outside of EPA CLP QC limits.



Cust ID:

AFTOUT-EXPLS

AFTIN-EXP-R2

AFTIN-EXP-R3

AFTOUT-EXPLS

V-R2COMP

V-R3COND

V-BTCOND

-COND

-COND

V-R2-FB

RFW#:

004

009

014

019

024

026

|                            |       |       |       |       |       |       |       |       |       |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2,4,6-Trichlorophenol      | 25 U  | 25 U  | 25 U  | 120 U | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 2,4,5-Trichlorophenol      | 120 U | 120 U | 120 U | 120 U | 620 U | 120 U | 620 U | 620 U | 120 U |
| 2-Chloronaphthalene        | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 2-Nitroaniline             | 120 U | 120 U | 120 U | 120 U | 620 U | 120 U | 620 U | 620 U | 120 U |
| Dimethylphthalate          | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Acenaphthylene             | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 2,6-Dinitrotoluene         | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 3-Nitroaniline             | 120 U | 120 U | 120 U | 120 U | 620 U | 120 U | 620 U | 620 U | 120 U |
| Acenaphthene               | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 2,4-Dinitrophenol          | 120 U | 120 U | 120 U | 120 U | 620 U | 120 U | 620 U | 620 U | 120 U |
| 4-Nitrophenol              | 120 U | 120 U | 120 U | 120 U | 620 U | 120 U | 620 U | 620 U | 120 U |
| Dibenzofuran               | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 2,4-Dinitrotoluene         | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Diethylphthalate           | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 4-Chlorophenyl-phenylether | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Fluorene                   | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 4-Nitroaniline             | 120 U | 120 U | 120 U | 120 U | 620 U | 120 U | 620 U | 620 U | 120 U |
| 4,6-Dinitro-2-methylphenol | 120 U | 120 U | 120 U | 120 U | 620 U | 120 U | 620 U | 620 U | 120 U |
| N-Nitrosodiphenylamine (1) | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 4-Bromophenyl-phenylether  | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Hexachlorobenzene          | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Pentachlorophenol          | 14 JB | 120 U | 120 U | 120 U | 620 U | 120 U | 620 U | 620 U | 120 U |
| Phenanthrene               | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Anthracene                 | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Di-n-Butylphthalate        | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Fluoranthene               | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Pyrene                     | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Butylbenzylphthalate       | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| 3,3'-Dichlorobenzidine     | 50 U  | 50 U  | 50 U  | 50 U  | 250 U | 50 U  | 250 U | 250 U | 50 U  |
| Benzo(a)anthracene         | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Chrysene                   | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| bis(2-Ethylhexyl)phthalate | 25 U  | 3 JB  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 11 JB |
| Di-n-Octyl phthalate       | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Benzo(b)fluoranthene       | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Benzo(k)fluoranthene       | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Benzo(a)pyrene             | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Indeno(1,2,3-cd)pyrene     | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Dibenzo(a,h)anthracene     | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Benzo(g,h,i)perylene       | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |
| Carbazole                  | 25 U  | 25 U  | 25 U  | 25 U  | 120 U | 25 U  | 120 U | 120 U | 25 U  |

(1) - Cannot be separated from Diphenylamine. \* = Outside of EPA CLP QC limits.

# Roy F. Weston, Inc. Unionville Laboratory

Report Date: 02/20/96 15:31

Semivolatiles by GC/MS, HSL List

RFW Batch Number: 96021963

Client: COE-HOT GAS

Work Order: 02281012012 Page: 2a

Cust ID: AFTOUT-EXPLS AFTOUT-EXPLS AFTOUT-EXPLS AFTOUT-EXPLS AFTIN-EXP-R2  
 V-R2-FX V-R3-FB V-R3-FX V-BT-FB V-BT-FX -FB  
 RFW#: 027 028 029 030 032  
 Matrix: AIR AIR AIR AIR AIR  
 D.F.: 25.0 2.50 25.0 2.50 2.50  
 Units: total ug total ug total ug total ug total ug

| Surrogate                    | Nitrobenzene-d5 | 92    | 73     | 90    | 69     | 93    | 70 | % |
|------------------------------|-----------------|-------|--------|-------|--------|-------|----|---|
| 2-Fluorobiphenyl             | 76              | 63    | 74     | 64    | 68     | 79    | %  |   |
| p-Terphenyl-d14              | 104             | 99    | 101    | 93    | 109    | 105   | %  |   |
| Phenol-d5                    | 75              | 65    | 77     | 61    | 73     | 68    | %  |   |
| 2-Fluorophenol               | 95              | 77    | 91     | 68    | 92     | 113   | %  |   |
| 2,4,6-Tribromophenol         | 73              | 72    | 75     | 62    | 72     | 76    | %  |   |
| Phenol                       | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| bis(2-Chloroethyl) ether     | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 2-Chlorophenol               | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 1,3-Dichlorobenzene          | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 1,4-Dichlorobenzene          | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| Benzyl alcohol               | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 1,2-Dichlorobenzene          | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 2-Methylphenol               | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| bis(2-Chloroisopropyl) ether | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 4-Methylphenol               | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| N-Nitroso-Di-n-propylamine   | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| Hexachloroethane             | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| Nitrobenzene                 | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| Isophorone                   | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 2-Nitrophenol                | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 2,4-Dimethylphenol           | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| Benzoic acid                 | 1200 U          | 120 U | 1200 U | 120 U | 1200 U | 120 U | %  |   |
| bis(2-Chloroethoxy)methane   | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 2,4-Dichlorophenol           | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 1,2,4-Trichlorobenzene       | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| Naphthalene                  | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 4-Chloroaniline              | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| Hexachlorobutadiene          | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 4-Chloro-3-methylphenol      | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| 2-Methylnaphthalene          | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |
| Hexachlorocyclopentadiene    | 250 U           | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | %  |   |

\*= Outside of EPA CLP QC limits.

|                            |        |       |        |       |        |       |        |       |       |
|----------------------------|--------|-------|--------|-------|--------|-------|--------|-------|-------|
| 2,4,6-Trichlorophenol      | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 2,4,5-Trichlorophenol      | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 120 U |
| 2-Chloronaphthalene        | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 2-Nitroaniline             | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 120 U |
| Dimethylphthalate          | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Acenaphthylene             | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 2,6-Dinitrotoluene         | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 3-Nitroaniline             | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 120 U |
| Acenaphthene               | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 2,4-Dinitrophenol          | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 120 U |
| 4-Nitrophenol              | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 120 U |
| Dibenzofuran               | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 2,4-Dinitrotoluene         | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Diethylphthalate           | 34 J   | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 4-Chlorophenyl-phenylether | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Fluorene                   | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 4-Nitroaniline             | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 120 U |
| 4,6-Dinitro-2-methylphenol | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 120 U |
| N-Nitrosodiphenylamine (1) | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 4-Bromophenyl-phenylether  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Hexachlorobenzene          | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Pentachlorophenol          | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 1200 U | 120 U | 120 U |
| Phenanthrene               | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Anthracene                 | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Di-n-Butylphthalate        | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Fluoranthene               | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Pyrene                     | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Butylbenzylphthalate       | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| 3,3'-Dichlorobenzidine     | 500 U  | 50 U  | 500 U  | 50 U  | 500 U  | 50 U  | 500 U  | 50 U  | 50 U  |
| Benzo(a)anthracene         | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Chrysene                   | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| bis(2-Ethylhexyl)phthalate | 250 U  | 8 JB  | 250 U  | 19 JB | 250 U  | 33 JB | 250 U  | 33 JB | 33 JB |
| Di-n-Octyl phthalate       | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Benzo(b)fluoranthene       | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Benzo(k)fluoranthene       | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Benzo(a)pyrene             | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Indeno(1,2,3-cd)pyrene     | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Dibenzo(a,h)anthracene     | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Benzo(g,h,i)perylene       | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |
| Carbazole                  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 250 U  | 25 U  | 25 U  |

(1) - Cannot be separated from Diphenylamine. \* = Outside of EPA CLP QC limits.

# Roy F. Weston, Inc. Lionville Laboratory

Report Date: 02/20/96 15:31

Semivolatiles by GC/MS, HSL List

Work Order: 02281012012 Page: 3a

RFW Batch Number: 9602L963

Client: COB-HOT GAS

| Sample Information | RFW#:   | Cust ID: AFTIN-EXP-R2 |          | AFTIN-EXP-R3 |          | AFTIN-EXP-R3 |          | SBLKSO       |              | SBLKSO BS    |              | SBLKSO BSD   |              |
|--------------------|---------|-----------------------|----------|--------------|----------|--------------|----------|--------------|--------------|--------------|--------------|--------------|--------------|
|                    |         | -FX                   | 033      | -FB          | 034      | -FX          | 035      | 96LE0209-MB1 | 96LE0209-MB1 | 96LE0209-MB1 | 96LE0209-MB1 | 96LE0209-MB1 | 96LE0209-MB1 |
|                    | Matrix: | AIR                   | AIR      | AIR          | AIR      | AIR          | AIR      | AIR          | AIR          | AIR          | AIR          | AIR          | AIR          |
|                    | D.F.:   | 25.0                  | 25.0     | 25.0         | 25.0     | 25.0         | 25.0     | 2.50         | 2.50         | 2.50         | 2.50         | 2.50         | 2.50         |
|                    | Units:  | total ug              | total ug | total ug     | total ug | total ug     | total ug | total ug     | total ug     | total ug     | total ug     | total ug     | total ug     |

| Surrogate | Nitrobenzene-d5              | 31     | 54    | 66    | 87    | 56     | 74    | 72    | 66    |
|-----------|------------------------------|--------|-------|-------|-------|--------|-------|-------|-------|
| Recovery  | 2-Fluorobiphenyl             | 33     | 66    | 87    | 57    | 68     | 75    | 82    | 77    |
|           | p-Terphenyl-d14              | 64     | 87    | 52    | 80    | 87     | 81    | 84    | 75    |
|           | Phenol-d5                    | 30     | 52    | 73    | 71    | 57     | 19 *  | 19 *  | 17 *  |
|           | 2-Fluorophenol               | 45     | 73    | 60    | 71    | 80     | 46    | 36    | 31    |
|           | 2,4,6-Tribromophenol         | 44     | 60    | 71    | 71    | 71     | 68    | 91    | 84    |
|           |                              | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 18 *  | 17 *  |
|           | Phenol                       | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | bis(2-Chloroethyl) ether     | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 65    | 59    |
|           | 2-Chlorophenol               | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 1,3-Dichlorobenzene          | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 65    | 58    |
|           | 1,4-Dichlorobenzene          | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | Benzyl alcohol               | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 1,2-Dichlorobenzene          | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 2-Methylphenol               | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | bis(2-Chloroisopropyl) ether | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 4-Methylphenol               | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 77    | 70    |
|           | N-Nitroso-Di-n-propylamine   | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | Hexachloroethane             | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | Nitrobenzene                 | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | Isophorone                   | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 2-Nitrophenol                | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 2,4-Dimethylphenol           | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | Benzoic acid                 | 1200 U | 120 U | 120 U | 120 U | 1200 U | 120 U | 120 U | 120 U |
|           | bis(2-Chloroethoxy)methane   | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 2,4-Dichlorophenol           | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 1,2,4-Trichlorobenzene       | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 73    | 67    |
|           | Naphthalene                  | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 4-Chloroaniline              | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | Hexachlorobutadiene          | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | 4-Chloro-3-methylphenol      | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 75    | 68    |
|           | 2-Methylnaphthalene          | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |
|           | Hexachlorocyclopentadiene    | 250 U  | 25 U  | 25 U  | 25 U  | 250 U  | 25 U  | 25 U  | 25 U  |

\*= Outside of EPA CLP QC limits.

| RFW#:                      | 033    | -FX | 034   | -FB | 035    | 96LE0209-MB1 | 96LE0209-MB1 | 96LE0209-MB1 |
|----------------------------|--------|-----|-------|-----|--------|--------------|--------------|--------------|
| 2,4,6-Trichlorophenol      | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| 2,4,5-Trichlorophenol      | 1200 U |     | 120 U |     | 1200 U | 120 U        | 120 U        | 120 U        |
| 2-Chloronaphthalene        | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| 2-Nitroaniline             | 1200 U |     | 120 U |     | 1200 U | 120 U        | 120 U        | 120 U        |
| Dimethylphthalate          | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Acenaphthylene             | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| 2,6-Dinitrotoluene         | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| 3-Nitroaniline             | 1200 U |     | 120 U |     | 1200 U | 120 U        | 120 U        | 120 U        |
| Acenaphthene               | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 74           | 69           |
| 2,4-Dinitrophenol          | 1200 U |     | 120 U |     | 1200 U | 120 U        | 120 U        | 120 U        |
| 4-Nitrophenol              | 1200 U |     | 120 U |     | 1200 U | 120 U        | 19           | 19           |
| Dibenzofuran               | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| 2,4-Dinitrotoluene         | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 82           | 76           |
| Diethylphthalate           | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| 4-Chlorophenyl-phenylether | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Fluorene                   | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| 4-Nitroaniline             | 1200 U |     | 120 U |     | 1200 U | 120 U        | 120 U        | 120 U        |
| 4,6-Dinitro-2-methylphenol | 1200 U |     | 120 U |     | 1200 U | 120 U        | 120 U        | 120 U        |
| N-Nitrosodiphenylamine (1) | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| 4-Bromophenyl-phenylether  | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Hexachlorobenzene          | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Pentachlorophenol          | 1200 U |     | 120 U |     | 1200 U | 3 J          | 78           | 82           |
| Phenanthrene               | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Anthracene                 | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Di-n-Butylphthalate        | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Fluoranthene               | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Pyrene                     | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 77           | 68           |
| Butylbenzylphthalate       | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| 3,3'-Dichlorobenzidine     | 500 U  |     | 50 U  |     | 500 U  | 50 U         | 50 U         | 50 U         |
| Benzo(a)anthracene         | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Chrysene                   | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| bis(2-Ethylhexyl)phthalate | 250 U  |     | 10 J  |     | 150 J  | 7 J          | 13 JB        | 25 U         |
| Di-n-Octyl phthalate       | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Benzo(b)fluoranthene       | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Benzo(k)fluoranthene       | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Benzo(a)pyrene             | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Indeno(1,2,3-cd)pyrene     | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Dibenzo(a,h)anthracene     | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Benzo(g,h,i)perylene       | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |
| Carbazole                  | 250 U  |     | 25 U  |     | 250 U  | 25 U         | 25 U         | 25 U         |

(1) - Cannot be separated from Diphenylamine.      \* = Outside of EPA CLP QC limits.

Roy F. Weston, Inc. Monville Laboratory  
Semivolatiles by GC/MS, HSL List

Report Date: 02/20/96 15:31

RFW Batch Number: 9602L963

Client: COE-HOT GAS

Work Order: 02281012012 Page: 4a

Cust ID: SBLKXS SBLKXS BS SBLKXS BSD

Sample RFW#: 96LE0236-MB1 96LE0236-MB1 96LE0236-MB1

Information Matrix: AIR AIR AIR

D.F.: 2.50 2.50 2.50

Units: total ug total ug total ug

| Surrogate | Nitrobenzene-d5              | 53  | % | 71  | % | 70  | % |
|-----------|------------------------------|-----|---|-----|---|-----|---|
| Recovery  | 2-Fluorobiphenyl             | 67  | % | 89  | % | 89  | % |
|           | p-Terphenyl-d14              | 72  | % | 94  | % | 89  | % |
|           | Phenol-d5                    | 48  | % | 62  | % | 63  | % |
|           | 2-Fluorophenol               | 79  | % | 102 | % | 105 | % |
|           | 2,4,6-Tribromophenol         | 56  | % | 74  | % | 71  | % |
|           |                              | 25  | U | 51  | % | 51  | % |
|           | bis(2-Chloroethyl) ether     | 25  | U | 25  | U | 25  | U |
|           | 2-Chlorophenol               | 25  | U | 66  | % | 65  | % |
|           | 1,3-Dichlorobenzene          | 25  | U | 25  | U | 25  | U |
|           | 1,4-Dichlorobenzene          | 25  | U | 55  | % | 57  | % |
|           | Benzyl alcohol               | 25  | U | 25  | U | 25  | U |
|           | 1,2-Dichlorobenzene          | 25  | U | 25  | U | 25  | U |
|           | 2-Methylphenol               | 25  | U | 25  | U | 25  | U |
|           | bis(2-Chloroisopropyl) ether | 25  | U | 25  | U | 25  | U |
|           | 4-Methylphenol               | 25  | U | 25  | U | 25  | U |
|           | N-Nitroso-Di-n-propylamine   | 25  | U | 63  | % | 62  | % |
|           | Hexachloroethane             | 25  | U | 25  | U | 25  | U |
|           | Nitrobenzene                 | 25  | U | 25  | U | 25  | U |
|           | Isophorone                   | 25  | U | 25  | U | 25  | U |
|           | 2-Nitrophenol                | 25  | U | 25  | U | 25  | U |
|           | 2,4-Dimethylphenol           | 25  | U | 25  | U | 25  | U |
|           | Benzoic acid                 | 120 | U | 120 | U | 120 | U |
|           | bis(2-Chloroethoxy) methane  | 25  | U | 25  | U | 25  | U |
|           | 2,4-Dichlorophenol           | 25  | U | 25  | U | 25  | U |
|           | 1,2,4-Trichlorobenzene       | 25  | U | 65  | % | 66  | % |
|           | Naphthalene                  | 25  | U | 25  | U | 25  | U |
|           | 4-Chloroaniline              | 25  | U | 25  | U | 25  | U |
|           | Hexachlorobutadiene          | 25  | U | 25  | U | 25  | U |
|           | 4-Chloro-3-methylphenol      | 25  | U | 77  | % | 75  | % |
|           | 2-Methylnaphthalene          | 25  | U | 25  | U | 25  | U |
|           | Hexachlorocyclopentadiene    | 25  | U | 25  | U | 25  | U |

\*= Outside of EPA CLP QC limits.

Cust ID: SBLKSX

SBLKSX BS

SBLKSX BSD

RFW#: 96LE02336-MB1 96LE02336-MB1 96LE02336-MB1

|                            |       |       |       |
|----------------------------|-------|-------|-------|
| 2,4,6-Trichlorophenol      | 25 U  | 25 U  | 25 U  |
| 2,4,5-Trichlorophenol      | 120 U | 120 U | 120 U |
| 2-Chloronaphthalene        | 25 U  | 25 U  | 25 U  |
| 2-Nitroaniline             | 120 U | 120 U | 120 U |
| Dimethylphthalate          | 25 U  | 25 U  | 25 U  |
| Acenaphthylene             | 25 U  | 25 U  | 25 U  |
| 2,6-Dinitrotoluene         | 25 U  | 25 U  | 25 U  |
| 3-Nitroaniline             | 120 U | 120 U | 120 U |
| Acenaphthene               | 25 U  | 76 %  | 75 %  |
| 2,4-Dinitrophenol          | 120 U | 120 U | 120 U |
| 4-Nitrophenol              | 120 U | 54 %  | 58 %  |
| Dibenzofuran               | 25 U  | 25 U  | 25 U  |
| 2,4-Dinitrotoluene         | 25 U  | 77 %  | 76 %  |
| Diethylphthalate           | 25 U  | 25 U  | 25 U  |
| 4-Chlorophenyl-phenylether | 25 U  | 25 U  | 25 U  |
| Fluorene                   | 25 U  | 25 U  | 25 U  |
| 4-Nitroaniline             | 120 U | 120 U | 120 U |
| 4,6-Dinitro-2-methylphenol | 120 U | 120 U | 120 U |
| N-Nitrosodiphenylamine (1) | 25 U  | 25 U  | 25 U  |
| 4-Bromophenyl-phenylether  | 25 U  | 25 U  | 25 U  |
| Hexachlorobenzene          | 25 U  | 25 U  | 25 U  |
| Pentachlorophenol          | 120 U | 83 %  | 82 %  |
| Phenanthrene               | 25 U  | 25 U  | 25 U  |
| Anthracene                 | 25 U  | 25 U  | 25 U  |
| Di-n-Butylphthalate        | 25 U  | 25 U  | 25 U  |
| Fluoranthene               | 25 U  | 25 U  | 25 U  |
| Pyrene                     | 25 U  | 81 %  | 76 %  |
| Butylbenzylphthalate       | 25 U  | 25 U  | 25 U  |
| 3,3'-Dichlorobenzidine     | 50 U  | 50 U  | 50 U  |
| Benzo(a)anthracene         | 25 U  | 25 U  | 25 U  |
| Chrysene                   | 25 U  | 25 U  | 25 U  |
| bis(2-Ethylhexyl)phthalate | 25 U  | 25 U  | 25 U  |
| Di-n-Octyl phthalate       | 25 U  | 25 U  | 25 U  |
| Benzo(b)fluoranthene       | 25 U  | 25 U  | 25 U  |
| Benzo(k)fluoranthene       | 25 U  | 25 U  | 25 U  |
| Benzo(a)pyrene             | 25 U  | 25 U  | 25 U  |
| Indeno(1,2,3-cd)pyrene     | 25 U  | 25 U  | 25 U  |
| Dibenzo(a,h)anthracene     | 25 U  | 25 U  | 25 U  |
| Benzo(g,h,i)perylene       | 25 U  | 25 U  | 25 U  |
| Carbazole                  | 25 U  | 25 U  | 25 U  |

(1) - Cannot be separated from Diphenylamine. \* = Outside of EPA CLP QC limits.

**CASE NARRATIVE**





Roy F. Weston, Inc.  
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## LIONVILLE LABORATORY ANALYTICAL REPORT

Client : COE-HOT GAS  
RFW# : 9602L963

W.O. #: 02281-012-012-1200-00  
Date Received: 07 February 1996

### SEMIVOLATILE

The set of samples consisted of five (5) air samples collected on 02 and 04 1996. Each sampling train consisted of three fractions: condensate, solid (filter/XAD), and solvent; each fraction was analyzed and reported individually.

These samples were prepared for Method 8330 analyses on 07 and 08 February 1996; and processed for Method 8270 on 09 and 14 February 1996, and analyzed according to criteria set forth in SW 846 Method 8270 for TCL Semivolatile target compounds on 11,13,17,19 and 20 February 1996.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Four (4) mL portions of the 8330 Acetonitrile extracts were spiked with Semivolatile surrogates and partitioned into Methylenelchloride. Due to the presence of Acetonitrile in the initial extracts, poor chromatography was observed in the Semivolatile analysis for samples AFTOUT-EXPLSV-R2COMP, AFTOUT-EXPLSV-R3COND, AFTOUT-EXPLSV-BTCOND, AFTOUT-EXPLSV-R2-FX, AFTOUT-EXPLSV-R3-FX and AFTOUT-EXPLSV-BT-FX. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
2. All required holding times for extraction and analysis were met.
3. Non-target compounds were detected in these samples.
4. Three (3) of one-hundred-twenty-six (126) surrogate recoveries were outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met {i.e., no more than one outlier per fraction (acid and base neutral) and no recoveries less than 10%}.
5. Two (2) of forty-four (44) blank spike recoveries were outside EPA QC limits.
6. The method blank 96LE0209-MB1 contained the target compound Pentachlorophenol and the common contaminant Bis (2-Ethylhexyl)phthalate at levels less than the CRQL.
7. All internal standard area and retention time criteria were met.





8. The sample IDs for this set of samples were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters on Organic CLP forms.

*James C. [Signature]*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2-22-96  
Date

**GLOSSARY OF BNA DATA**

**DATA QUALIFIERS**

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- A** = Indicates that a TIC is a suspected aldol-condensation product.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



## GLOSSARY OF BNA DATA

### ABBREVIATIONS

|       |   |                                                                                                                                                                                  |
|-------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BS    | = | Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported. |
| BSD   | = | Indicates blank spike duplicate.                                                                                                                                                 |
| MS    | = | Indicates matrix spike.                                                                                                                                                          |
| MSD   | = | Indicates matrix spike duplicate.                                                                                                                                                |
| DL    | = | Suffix added to sample number to indicate that results are from a diluted analysis.                                                                                              |
| NA    | = | Not Applicable.                                                                                                                                                                  |
| DF    | = | Dilution Factor.                                                                                                                                                                 |
| NR    | = | Not Required.                                                                                                                                                                    |
| SP, Z | = | Indicates Spiked Compound.                                                                                                                                                       |

## TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP** - Missed Peak: manually added peak not found by automatic quan program.
- PA** - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI** - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP** - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB** - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI** - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

## QC SUMMARY

2D  
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot No.: 9602L963

|    | CLIENT<br>SAMPLE NO. | S1<br>(NBZ) # | S2<br>(FBP) # | S3<br>(TPH) # | S4<br>(PHL) # | S5<br>(2FP) # | S6<br>(TBP) # | OTHER | TOT<br>OUT |
|----|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|-------|------------|
| 01 | AFTOUT-EXPLSV-R2COMP | 67            | 68            | 83            | 55            | 80            | 84            |       | 0          |
| 02 | AFTOUT-EXPLSV-R3COND | 65            | 62            | 91            | 50            | 69            | 82            |       | 0          |
| 03 | AFTOUT-EXPLSV-BTCOND | 61            | 72            | 81            | 52            | 72            | 75            |       | 0          |
| 04 | AFTIN-EXP-R2-COND    | 61            | 55            | 83            | 53            | 104           | 48            |       | 0          |
| 05 | AFTIN-EXP-R3-COND    | 63            | 51            | 67            | 49            | 106           | 49            |       | 0          |
| 06 | AFTOUT-EXPLSV-R2-FB  | 74            | 66            | 94            | 68            | 82            | 71            |       | 0          |
| 07 | AFTOUT-EXPLSV-R2-FX  | 92            | 76            | 104           | 75            | 95            | 73            |       | 0          |
| 08 | AFTOUT-EXPLSV-R3-FB  | 73            | 63            | 99            | 65            | 77            | 72            |       | 0          |
| 09 | AFTOUT-EXPLSV-R3-FX  | 90            | 74            | 101           | 77            | 91            | 75            |       | 0          |
| 10 | AFTOUT-EXPLSV-BT-FB  | 69            | 64            | 93            | 61            | 68            | 62            |       | 0          |
| 11 | AFTOUT-EXPLSV-BT-FX  | 93            | 68            | 109           | 73            | 92            | 72            |       | 0          |
| 12 | AFTIN-EXP-R2-FB      | 70            | 79            | 105           | 68            | 113           | 76            |       | 0          |
| 13 | AFTIN-EXP-R2-FX      | 31            | 33            | 64            | 30            | 45            | 44            |       | 0          |
| 14 | AFTIN-EXP-R3-FB      | 54            | 66            | 87            | 52            | 73            | 60            |       | 0          |
| 15 | AFTIN-EXP-R3-FX      | 56            | 68            | 87            | 57            | 80            | 71            |       | 0          |
| 16 | SBLKSOLE0209-MB1     | 74            | 75            | 81            | 19 *          | 46            | 68            |       | 1          |
| 17 | SBLKSOLE0209-MB1 BS  | 72            | 82            | 84            | 19 *          | 36            | 91            |       | 1          |
| 18 | SBLKSOLE0209-MB1 BSD | 66            | 77            | 75            | 17 *          | 31            | 84            |       | 1          |
| 19 | SBLKSXLE0236-MB1     | 53            | 67            | 72            | 48            | 79            | 56            |       | 0          |
| 20 | SBLKSXLE0236-MB1 BS  | 71            | 89            | 94            | 62            | 102           | 74            |       | 0          |
| 21 | SBLKSXLE0236-MB1 BSD | 70            | 89            | 89            | 63            | 105           | 71            |       | 0          |

QC LIMITS

S1 (NBZ) = Nitrobenzene-d5 ( 23-120)  
 S2 (FBP) = 2-Fluorobiphenyl ( 30-115)  
 S3 (TPH) = p-Terphenyl-d14 ( 18-137)  
 S4 (PHL) = Phenol-d5 ( 24-113)  
 S5 (2FP) = 2-Fluorophenol ( 25-121)  
 S6 (TBP) = 2,4,6-Tribromophenol ( 19-122)

# Column to be used to flag recovery values  
 \* Values outside of QC limits  
 D Surrogates diluted out

3D

## SOIL SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot No.: 9602L963BLANK Spike - Sample No.: SBLKSOLE0209-MB1Level: (low/med) LOW

| COMPOUND                   | SPIKE<br>ADDED<br>UG/L | SAMPLE<br>CONCENTRATION<br>UG/L | BS<br>CONCENTRATION<br>UG/L | BS<br>%<br>REC # | QC<br>LIMITS<br>REC |
|----------------------------|------------------------|---------------------------------|-----------------------------|------------------|---------------------|
| Phenol                     | 250                    | 0                               | 44.9                        | 18 *             | 26 - 90             |
| 2-Chlorophenol             | 250                    | 0                               | 163                         | 65               | 25 -102             |
| 1,4-Dichlorobenzene        | 125                    | 0                               | 80.7                        | 65               | 28 -104             |
| N-Nitroso-Di-n-propylamine | 125                    | 0                               | 96.2                        | 77               | 41 -126             |
| 1,2,4-Trichlorobenzene     | 125                    | 0                               | 90.7                        | 73               | 38 -107             |
| 4-Chloro-3-methylphenol    | 250                    | 0                               | 187                         | 75               | 26 -103             |
| Acenaphthene               | 125                    | 0                               | 93.1                        | 75               | 31 -137             |
| 4-Nitrophenol              | 250                    | 0                               | 47.2                        | 19               | 11 -114             |
| 2,4-Dinitrotoluene         | 125                    | 0                               | 102                         | 82               | 28 - 89             |
| Pentachlorophenol          | 250                    | 3.32                            | 199                         | 78               | 17 -109             |
| Pyrene                     | 125                    | 0                               | 96.8                        | 77               | 35 -142             |

| COMPOUND                   | SPIKE<br>ADDED<br>UG/L | BSD<br>CONCENTRATION<br>UG/L | BSD<br>%<br>REC # | %<br>RPD # | QC LIMITS<br>RPD | REC     |
|----------------------------|------------------------|------------------------------|-------------------|------------|------------------|---------|
| Phenol                     | 250                    | 41.4                         | 17 *              | 5          | 35               | 26 - 90 |
| 2-Chlorophenol             | 250                    | 149                          | 59                | 9          | 50               | 25 -102 |
| 1,4-Dichlorobenzene        | 125                    | 72.9                         | 58                | 11         | 27               | 28 -104 |
| N-Nitroso-Di-n-propylamine | 125                    | 87.6                         | 70                | 9          | 38               | 41 -126 |
| 1,2,4-Trichlorobenzene     | 125                    | 84.0                         | 67                | 8          | 23               | 38 -107 |
| 4-Chloro-3-methylphenol    | 250                    | 171                          | 68                | 9          | 33               | 26 -103 |
| Acenaphthene               | 125                    | 86.8                         | 69                | 8          | 19               | 31 -137 |
| 4-Nitrophenol              | 250                    | 48.2                         | 19                | 0          | 50               | 11 -114 |
| 2,4-Dinitrotoluene         | 125                    | 94.6                         | 76                | 7          | 47               | 28 - 89 |
| Pentachlorophenol          | 250                    | 208                          | 82                | 5          | 47               | 17 -109 |
| Pyrene                     | 125                    | 85.4                         | 68                | 12         | 36               | 35 -142 |

# Column to be used to flag recovery and RPD values with an asterisk  
 \* Values outside of QC limits

RPD: 0 out of 11 outside limits  
 Spike Recovery: 2 out of 22 outside limits

COMMENTS:



3D

## SOIL SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot No.: 9602L963BLANK Spike - Sample No.: SBLKSXLE0236-MB1Level: (low/med) LOW

| COMPOUND                   | SPIKE<br>ADDED<br>UG/KG | SAMPLE<br>CONCENTRATION<br>UG/KG | BS<br>CONCENTRATION<br>UG/KG | BS<br>%<br>REC # | QC<br>LIMITS<br>REC |
|----------------------------|-------------------------|----------------------------------|------------------------------|------------------|---------------------|
| Phenol                     | 250                     | 0                                | 126                          | 51               | 26 - 90             |
| 2-Chlorophenol             | 250                     | 0                                | 164                          | 66               | 25 -102             |
| 1,4-Dichlorobenzene        | 125                     | 0                                | 68.3                         | 55               | 28 -104             |
| N-Nitroso-Di-n-propylamine | 125                     | 0                                | 78.4                         | 63               | 41 -126             |
| 1,2,4-Trichlorobenzene     | 125                     | 0                                | 81.2                         | 65               | 38 -107             |
| 4-Chloro-3-methylphenol    | 250                     | 0                                | 194                          | 77               | 26 -103             |
| Acenaphthene               | 125                     | 0                                | 95.2                         | 76               | 31 -137             |
| 4-Nitrophenol              | 250                     | 0                                | 136                          | 54               | 11 -114             |
| 2,4-Dinitrotoluene         | 125                     | 0                                | 95.7                         | 77               | 28 - 89             |
| Pentachlorophenol          | 250                     | 0                                | 207                          | 83               | 17 -109             |
| Pyrene                     | 125                     | 0                                | 101                          | 81               | 35 -142             |

| COMPOUND                   | SPIKE<br>ADDED<br>UG/KG | BSD<br>CONCENTRATION<br>UG/KG | BSD<br>%<br>REC # | %<br>RPD # | QC LIMITS<br>RPD   REC |
|----------------------------|-------------------------|-------------------------------|-------------------|------------|------------------------|
| Phenol                     | 250                     | 129                           | 51                | 0          | 35   26 - 90           |
| 2-Chlorophenol             | 250                     | 163                           | 65                | 1          | 50   25 -102           |
| 1,4-Dichlorobenzene        | 125                     | 71.4                          | 57                | 3          | 27   28 -104           |
| N-Nitroso-Di-n-propylamine | 125                     | 78.1                          | 62                | 1          | 38   41 -126           |
| 1,2,4-Trichlorobenzene     | 125                     | 82.6                          | 66                | 1          | 23   38 -107           |
| 4-Chloro-3-methylphenol    | 250                     | 187                           | 75                | 2          | 33   26 -103           |
| Acenaphthene               | 125                     | 93.8                          | 75                | 1          | 19   31 -137           |
| 4-Nitrophenol              | 250                     | 145                           | 58                | 7          | 50   11 -114           |
| 2,4-Dinitrotoluene         | 125                     | 94.6                          | 76                | 1          | 47   28 - 89           |
| Pentachlorophenol          | 250                     | 205                           | 82                | 1          | 47   17 -109           |
| Pyrene                     | 125                     | 95.0                          | 76                | 6          | 36   35 -142           |

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 11 outside limitsSpike Recovery: 0 out of 22 outside limits

COMMENTS:

4B  
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021103

Lab Sample ID: 96LE0209-MB1

Date Extracted: 02/09/96

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 02/11/96

Time Analyzed: 1123

Matrix: (Soil/Water) AIR

Level: (low/med) LOW

Instrument ID: 4500V

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|
| 01 | SBLKSOLE0209-MB1 BS  | 96LE0209-MB1S    | V021104        | 02/11/96         |
| 02 | SBLKSOLE0209-MB1 BSD | 96LE0209-MB1T    | V021105        | 02/11/96         |
| 03 | AFTOUT-EXPLSV-R2COMP | 9602L963-004     | V021112        | 02/11/96         |
| 04 | AFTOUT-EXPLSV-R3COND | 9602L963-009     | V021113        | 02/11/96         |
| 05 | AFTOUT-EXPLSV-BTCOND | 9602L963-014     | V021114        | 02/11/96         |
| 06 | AFTOUT-EXPLSV-R2-FB  | 9602L963-026     | V021308        | 02/13/96         |
| 07 | AFTOUT-EXPLSV-R2-FX  | 9602L963-027     | V021309        | 02/13/96         |
| 08 | AFTOUT-EXPLSV-R3-FB  | 9602L963-028     | V021310        | 02/13/96         |
| 09 | AFTOUT-EXPLSV-R3-FX  | 9602L963-029     | V021311        | 02/13/96         |
| 10 | AFTOUT-EXPLSV-BT-FB  | 9602L963-030     | V021312        | 02/13/96         |
| 11 | AFTOUT-EXPLSV-BT-FX  | 9602L963-031     | V021313        | 02/13/96         |

COMMENTS:

4B  
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021703

Lab Sample ID: 96LE0236-MB1

Date Extracted: 02/14/96

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 02/17/96

Time Analyzed: 1113

Matrix: (Soil/Water) AIR

Level: (low/med) LOW

Instrument ID: 4500V

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|
|    | =====                | =====            | =====          | =====            |
| 01 | SBLKSXLE0236-MB1 BS  | 96LE0236-MB1S    | V021704        | 02/17/96         |
| 02 | SBLKSXLE0236-MB1 BSD | 96LE0236-MB1T    | V021705        | 02/17/96         |
| 03 | AFTIN-EXP-R2-FB      | 9602L963-032     | V021714        | 02/17/96         |
| 04 | AFTIN-EXP-R2-FX      | 9602L963-033     | V021905        | 02/19/96         |
| 05 | AFTIN-EXP-R3-FB      | 9602L963-034     | V021906        | 02/19/96         |
| 06 | AFTIN-EXP-R3-FX      | 9602L963-035     | V021907        | 02/19/96         |
| 07 | AFTIN-EXP-R2-COND    | 9602L963-019     | V022003        | 02/20/96         |
| 08 | AFTIN-EXP-R3-COND    | 9602L963-024     | V022004        | 02/20/96         |

COMMENTS:

5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V020801

DFTPP Injection Date: 02/08/96

Instrument ID: 4500V

DFTPP Injection Time: 0830

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 55.9✓                |
| 68  | Less than 2.0% of mass 69          | 0.04✓ 0.0)1          |
| 69  | Mass 69 relative abundance         | 63.2✓                |
| 70  | Less than 2.0% of mass 69          | 0.04✓ 0.0)1          |
| 127 | 40.0 - 60.0% of mass 198           | 53.8✓                |
| 197 | Less than 1.0% of mass 198         | 0.0✓                 |
| 198 | Base Peak, 100% relative abundance | 100.0✓               |
| 199 | 5.0 to 9.0% of mass 198            | 6.1✓                 |
| 275 | 10.0 - 30.0% of mass 198           | 26.9✓                |
| 365 | Greater than 1.00% of mass 198     | 4.52✓                |
| 441 | Present, but less than mass 443    | 7.2✓                 |
| 442 | Greater than 40.0% of mass 198     | 61.2✓                |
| 443 | 17.0 - 23.0% of mass 442           | 11.8( 19.3)2         |

*OK  
DAF  
2/8/96*

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V020802        | 02/08/96         | 0908             |
| 02 | SSTD80               | SSTD80           | V020803        | 02/08/96         | 1108             |
| 03 | SSTD120              | SSTD120          | V020804        | 02/08/96         | 1157             |
| 04 | SSTD160              | SSTD160          | V020805        | 02/08/96         | 1246             |
| 05 | SSTD20               | SSTD20           | V020806        | 02/08/96         | 1336             |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
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| 09 |                      |                  |                |                  |                  |
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| 20 |                      |                  |                |                  |                  |

5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021101

DFTPP Injection Date: 02/11/96

Instrument ID: 4500V

DFTPP Injection Time: 0854

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 42.9 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 69  | Mass 69 relative abundance         | 44.0 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0)1          |
| 127 | 40.0 - 60.0% of mass 198           | 46.2 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.0 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 6.8 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 23.5 ✓               |
| 365 | Greater than 1.00% of mass 198     | 2.97 ✓               |
| 441 | Present, but less than mass 443    | 5.8 ✓                |
| 442 | Greater than 40.0% of mass 198     | 47.1 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 9.0 ( 19.1)2         |

1-Value is % mass 69

2-Value is % mass 442

*OK  
DAX  
2/20/96*

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021102        | 02/11/96         | 0941             |
| 02 | SBLKSOLE0209-MB1     | 96LE0209-MB1     | V021103        | 02/11/96         | 1123             |
| 03 | SBLKSOLE0209-MB1 BS  | 96LE0209-MB1S    | V021104        | 02/11/96         | 1212             |
| 04 | SBLKSOLE0209-MB1 BSD | 96LE0209-MB1T    | V021105        | 02/11/96         | 1301             |
| 05 | AFTOUT-EXPLSV-R2COMP | 9602L963-004     | V021112        | 02/11/96         | 1845             |
| 06 | AFTOUT-EXPLSV-R3COND | 9602L963-009     | V021113        | 02/11/96         | 1934             |
| 07 | AFTOUT-EXPLSV-BTCOND | 9602L963-014     | V021114        | 02/11/96         | 2024             |
| 08 |                      |                  |                |                  |                  |
| 09 |                      |                  |                |                  |                  |
| 10 |                      |                  |                |                  |                  |
| 11 |                      |                  |                |                  |                  |
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| 18 |                      |                  |                |                  |                  |
| 19 |                      |                  |                |                  |                  |
| 20 |                      |                  |                |                  |                  |

5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021301

DFTPP Injection Date: 02/13/96

Instrument ID: 4500V

DFTPP Injection Time: 1044

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 51.5✓                |
| 68  | Less than 2.0% of mass 69          | 0.4✓ 0.78) 1         |
| 69  | Mass 69 relative abundance         | 55.6✓                |
| 70  | Less than 2.0% of mass 69          | 0.0✓ 0.0) 1          |
| 127 | 40.0 - 60.0% of mass 198           | 56.6✓                |
| 197 | Less than 1.0% of mass 198         | 0.0✓                 |
| 198 | Base Peak, 100% relative abundance | 100.0✓               |
| 199 | 5.0 to 9.0% of mass 198            | 6.8✓                 |
| 275 | 10.0 - 30.0% of mass 198           | 22.1✓                |
| 365 | Greater than 1.00% of mass 198     | 3.42✓                |
| 441 | Present, but less than mass 443    | 6.0✓                 |
| 442 | Greater than 40.0% of mass 198     | 50.7✓                |
| 443 | 17.0 - 23.0% of mass 442           | 9.8 ( 19.4) 2        |

1-Value is % mass 69

2-Value is % mass 442

*OK  
DFT  
2/13/96*

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021303        | 02/13/96         | 1229             |
| 02 | SSTD80               | SSTD80           | V021304        | 02/13/96         | 1342             |
| 03 | SSTD120              | SSTD120          | V021305        | 02/13/96         | 1431             |
| 04 | SSTD160              | SSTD160          | V021306        | 02/13/96         | 1520             |
| 05 | SSTD20               | SSTD20           | V021307        | 02/13/96         | 1610             |
| 06 | AFTOUT-EXPLSV-R2-FB  | 9602L963-026     | V021308        | 02/13/96         | 1748             |
| 07 | AFTOUT-EXPLSV-R2-FX  | 9602L963-027     | V021309        | 02/13/96         | 1837             |
| 08 | AFTOUT-EXPLSV-R3-FB  | 9602L963-028     | V021310        | 02/13/96         | 1926             |
| 09 | AFTOUT-EXPLSV-R3-FX  | 9602L963-029     | V021311        | 02/13/96         | 2015             |
| 10 | AFTOUT-EXPLSV-BT-FB  | 9602L963-030     | V021312        | 02/13/96         | 2105             |
| 11 | AFTOUT-EXPLSV-BT-FX  | 9602L963-031     | V021313        | 02/13/96         | 2154             |
| 12 |                      |                  |                |                  |                  |
| 13 |                      |                  |                |                  |                  |
| 14 |                      |                  |                |                  |                  |
| 15 |                      |                  |                |                  |                  |
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| 20 |                      |                  |                |                  |                  |

5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021601

DFTPP Injection Date: 02/16/96

Instrument ID: 4500V

DFTPP Injection Time: 0926

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 39.9✓                |
| 68  | Less than 2.0% of mass 69          | 0.6✓ 1.3)1           |
| 69  | Mass 69 relative abundance         | 49.3✓                |
| 70  | Less than 2.0% of mass 69          | 0.0✓ 0.0)1           |
| 127 | 40.0 - 60.0% of mass 198           | 55.2✓                |
| 197 | Less than 1.0% of mass 198         | 0.7✓                 |
| 198 | Base Peak, 100% relative abundance | 100.0✓               |
| 199 | 5.0 to 9.0% of mass 198            | 6.6✓                 |
| 275 | 10.0 - 30.0% of mass 198           | 28.3✓                |
| 365 | Greater than 1.00% of mass 198     | 5.50✓                |
| 441 | Present, but less than mass 443    | 12.2✓                |
| 442 | Greater than 40.0% of mass 198     | 93.2✓                |
| 443 | 17.0 - 23.0% of mass 442           | 17.7✓ 19.0)2         |

*OK  
DFT  
2/16/96*

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021602        | 02/16/96         | 1010             |
| 02 | SSTD80               | SSTD80           | V021603        | 02/16/96         | 1148             |
| 03 | SSTD120              | SSTD120          | V021604        | 02/16/96         | 1237             |
| 04 | SSTD160              | SSTD160          | V021605        | 02/16/96         | 1326             |
| 05 | SSTD20               | SSTD20           | V021606        | 02/16/96         | 1416             |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
| 08 |                      |                  |                |                  |                  |
| 09 |                      |                  |                |                  |                  |
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5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021701

DFTPP Injection Date: 02/17/96

Instrument ID: 4500V

DFTPP Injection Time: 0849

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 33.2 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.7 ✓ 1.4) 1         |
| 69  | Mass 69 relative abundance         | 45.6 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.0 ✓ 0.0) 1         |
| 127 | 40.0 - 60.0% of mass 198           | 52.9 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.0 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 7.2 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 29.1 ✓               |
| 365 | Greater than 1.00% of mass 198     | 5.46 ✓               |
| 441 | Present, but less than mass 443    | 10.9 ✓               |
| 442 | Greater than 40.0% of mass 198     | 83.5 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 16.1 ( 19.3) 2       |

*Ed  
DAF  
3/20/96*

1-Value is % mass 69

2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021702        | 02/17/96         | 0923             |
| 02 | SBKLSXLE0236-MB1     | 96LE0236-MB1     | V021703        | 02/17/96         | 1113             |
| 03 | SBKLSXLE0236-MB1 BS  | 96LE0236-MB1S    | V021704        | 02/17/96         | 1201             |
| 04 | SBKLSXLE0236-MB1 BSD | 96LE0236-MB1T    | V021705        | 02/17/96         | 1251             |
| 05 | AFTIN-EXP-R2-FB      | 9602L963-032     | V021714        | 02/17/96         | 2014             |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
| 08 |                      |                  |                |                  |                  |
| 09 |                      |                  |                |                  |                  |
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5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021901

DFTPP Injection Date: 02/19/96

Instrument ID: 4500V

DFTPP Injection Time: 0846

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 31.3 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.5 (✓ 1.2) 1        |
| 69  | Mass 69 relative abundance         | 45.4 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.3 (✓ 0.69) 1       |
| 127 | 40.0 - 60.0% of mass 198           | 53.6 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.0 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 7.1 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 29.5 ✓               |
| 365 | Greater than 1.00% of mass 198     | 6.24 ✓               |
| 441 | Present, but less than mass 443    | 11.5 ✓               |
| 442 | Greater than 40.0% of mass 198     | 90.4 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 16.9 ✓ 18.7) 2       |

1-Value is % mass 69

2-Value is % mass 442

*Ed  
D.A.  
2/20/96*

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V021902        | 02/19/96         | 0921             |
| 02 | AFTIN-EXP-R2-FX      | 9602L963-033     | V021905        | 02/19/96         | 1222             |
| 03 | AFTIN-EXP-R3-FB      | 9602L963-034     | V021906        | 02/19/96         | 1311             |
| 04 | AFTIN-EXP-R3-FX      | 9602L963-035     | V021907        | 02/19/96         | 1400             |
| 05 |                      |                  |                |                  |                  |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
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| 20 |                      |                  |                |                  |                  |

5B  
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK  
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V022001

DFTPP Injection Date: 02/20/96

Instrument ID: 4500V

DFTPP Injection Time: 1059

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 51  | 30.0 - 60.0% of mass 198           | 34.6 ✓               |
| 68  | Less than 2.0% of mass 69          | 0.4 ✓ (0.78) 1       |
| 69  | Mass 69 relative abundance         | 53.6 ✓               |
| 70  | Less than 2.0% of mass 69          | 0.3 ✓ (0.56) 1       |
| 127 | 40.0 - 60.0% of mass 198           | 56.6 ✓               |
| 197 | Less than 1.0% of mass 198         | 0.6 ✓                |
| 198 | Base Peak, 100% relative abundance | 100.0 ✓              |
| 199 | 5.0 to 9.0% of mass 198            | 7.5 ✓                |
| 275 | 10.0 - 30.0% of mass 198           | 27.7 ✓               |
| 365 | Greater than 1.00% of mass 198     | 4.97 ✓               |
| 441 | Present, but less than mass 443    | 7.6 ✓                |
| 442 | Greater than 40.0% of mass 198     | 60.5 ✓               |
| 443 | 17.0 - 23.0% of mass 442           | 11.2 ✓ (18.6) 2      |

1-Value is % mass 69

2-Value is % mass 442

*OK  
DFT  
2/20/96*

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | CLIENT<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|----------------------|------------------|----------------|------------------|------------------|
| 01 | SSTD50               | SSTD50           | V022002        | 02/20/96         | 1149             |
| 02 | AFTIN-EXP-R2-COND    | 9602L963-019     | V022003        | 02/20/96         | 1314             |
| 03 | AFTIN-EXP-R3-COND    | 9602L963-024     | V022004        | 02/20/96         | 1403             |
| 04 |                      |                  |                |                  |                  |
| 05 |                      |                  |                |                  |                  |
| 06 |                      |                  |                |                  |                  |
| 07 |                      |                  |                |                  |                  |
| 08 |                      |                  |                |                  |                  |
| 09 |                      |                  |                |                  |                  |
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| 18 |                      |                  |                |                  |                  |
| 19 |                      |                  |                |                  |                  |
| 20 |                      |                  |                |                  |                  |

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L963Lab File ID (Standard): V021102Date Analyzed: 02/11/96Instrument ID: 4500VTime Analyzed: 0941

|                         | IS1 (DCB) |       |  | IS2 (NPT) |        | IS3 (ANT) |        |
|-------------------------|-----------|-------|--|-----------|--------|-----------|--------|
|                         | AREA #    | RT    |  | AREA #    | RT     | AREA #    | RT     |
| =====                   | =====     | ===== |  | =====     | =====  | =====     | =====  |
| 12 HOUR STD             | 26253     | 9.000 |  | 118200    | 12.933 | 72624     | 18.533 |
| =====                   | =====     | ===== |  | =====     | =====  | =====     | =====  |
| UPPER LIMIT             | 52506     | 9.50  |  | 236400    | 13.43  | 145248    | 19.03  |
| =====                   | =====     | ===== |  | =====     | =====  | =====     | =====  |
| LOWER LIMIT             | 13127     | 8.50  |  | 59100     | 12.43  | 36312     | 18.03  |
| =====                   | =====     | ===== |  | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.    |           |       |  |           |        |           |        |
| =====                   | =====     | ===== |  | =====     | =====  | =====     | =====  |
| 01 AFTOUT-EXPLSV-R2COMP | 32408     | 8.967 |  | 115627    | 12.917 | 77954     | 18.533 |
| 02 AFTOUT-EXPLSV-R3COND | 30942     | 8.933 |  | 105050    | 12.917 | 76161     | 18.533 |
| 03 AFTOUT-EXPLSV-BTCOND | 32061     | 8.967 |  | 114110    | 12.917 | 78212     | 18.533 |
| 04 SBLKSOLE0209-MB1     | 34581     | 9.317 |  | 115633    | 13.050 | 75023     | 18.567 |
| 05 SBLKSOLE0209-MB1 BS  | 23976     | 8.967 |  | 124180    | 12.917 | 87110     | 18.533 |
| 06 SBLKSOLE0209-MB1 BSD | 24764     | 8.967 |  | 129296    | 12.917 | 88401     | 18.533 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4  
 IS2 (NPT) = Naphthalene-d8  
 IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk

8C  
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): V021102

Date Analyzed: 02/11/96

Instrument ID: 4500V

Time Analyzed: 0941

|                         | IS4 (PHN) | RT     | IS5 (CRY) | RT     | IS6 (PRY) | RT     |
|-------------------------|-----------|--------|-----------|--------|-----------|--------|
|                         | AREA #    |        | AREA #    |        | AREA #    |        |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| 12 HOUR STD             | 110253    | 23.183 | 74447     | 29.383 | 59131     | 33.267 |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| UPPER LIMIT             | 220506    | 23.68  | 148894    | 29.88  | 118262    | 33.77  |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| LOWER LIMIT             | 55127     | 22.68  | 37224     | 28.88  | 29566     | 32.77  |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.    |           |        |           |        |           |        |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| 01 AFTOUT-EXPLSV-R2COMP | 97984     | 23.183 | 93577     | 29.433 | 87669     | 33.317 |
| 02 AFTOUT-EXPLSV-R3COND | 124635    | 23.183 | 101426    | 29.400 | 87118     | 33.300 |
| 03 AFTOUT-EXPLSV-BTCOND | 120330    | 23.183 | 95835     | 29.450 | 87020     | 33.350 |
| 04 SBLKSOLE0209-MB1     | 106581    | 23.200 | 102250    | 29.450 | 86605     | 33.350 |
| 05 SBLKSOLE0209-MB1 BS  | 138053    | 23.167 | 120368    | 29.333 | 103835    | 33.217 |
| 06 SBLKSOLE0209-MB1 BSD | 138599    | 23.167 | 128902    | 29.367 | 110335    | 33.267 |

IS4 (PHN) = Phenanthrene-d10  
IS5 (CRY) = Chrysene-d12  
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L963Lab File ID (Standard): V021303Date Analyzed: 02/13/96Instrument ID: 4500VTime Analyzed: 1229

|                        | IS1 (DCB) |       | IS2 (NPT) |        | IS3 (ANT) |        |
|------------------------|-----------|-------|-----------|--------|-----------|--------|
|                        | AREA #    | RT    | AREA #    | RT     | AREA #    | RT     |
| =====                  | =====     | ===== | =====     | =====  | =====     | =====  |
| 12 HOUR STD            | 23446     | 9.033 | 92464     | 12.917 | 51916     | 18.500 |
| =====                  | =====     | ===== | =====     | =====  | =====     | =====  |
| UPPER LIMIT            | 46892     | 9.53  | 184928    | 13.42  | 103832    | 19.00  |
| =====                  | =====     | ===== | =====     | =====  | =====     | =====  |
| LOWER LIMIT            | 11723     | 8.53  | 46232     | 12.42  | 25958     | 18.00  |
| =====                  | =====     | ===== | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.   |           |       |           |        |           |        |
| =====                  | =====     | ===== | =====     | =====  | =====     | =====  |
| 01 AFTOUT-EXPLSV-R2-FB | 20461     | 8.917 | 80469     | 12.867 | 51197     | 18.483 |
| 02 AFTOUT-EXPLSV-R2-FX | 22341     | 8.933 | 76913     | 12.867 | 50871     | 18.483 |
| 03 AFTOUT-EXPLSV-R3-FB | 22737     | 8.917 | 88929     | 12.867 | 56327     | 18.483 |
| 04 AFTOUT-EXPLSV-R3-FX | 20178     | 8.933 | 70776     | 12.867 | 49491     | 18.483 |
| 05 AFTOUT-EXPLSV-BT-FB | 20533     | 8.933 | 78412     | 12.883 | 49018     | 18.500 |
| 06 AFTOUT-EXPLSV-BT-FX | 21120     | 8.850 | 69951     | 12.883 | 47836     | 18.483 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4  
 IS2 (NPT) = Naphthalene-d8  
 IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk

8C  
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): V021303

Date Analyzed: 02/13/96

Instrument ID: 4500V

Time Analyzed: 1229

|                        | IS4 (PHN) |       | RT     | IS5 (CRY) |       | RT     | IS6 (PRY) |        |
|------------------------|-----------|-------|--------|-----------|-------|--------|-----------|--------|
|                        | AREA      | #     |        | AREA      | #     |        | AREA      | #      |
| =====                  | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| 12 HOUR STD            | 72422     |       | 23.133 | 38331     |       | 29.483 | 28141     | 33.400 |
| =====                  | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| UPPER LIMIT            | 144844    |       | 23.63  | 76662     |       | 29.98  | 56282     | 33.90  |
| =====                  | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| LOWER LIMIT            | 36211     |       | 22.63  | 19166     |       | 28.98  | 14071     | 32.90  |
| =====                  | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.   |           |       |        |           |       |        |           |        |
| =====                  | =====     | ===== | =====  | =====     | ===== | =====  | =====     | =====  |
| 01 AFTOUT-EXPLSV-R2-FB | 78706     |       | 23.133 | 50014     |       | 29.417 | 37471     | 33.300 |
| 02 AFTOUT-EXPLSV-R2-FX | 68960     |       | 23.133 | 44584     |       | 29.417 | 31811     | 33.317 |
| 03 AFTOUT-EXPLSV-R3-FB | 85668     |       | 23.133 | 50280     |       | 29.400 | 38267     | 33.283 |
| 04 AFTOUT-EXPLSV-R3-FX | 70247     |       | 23.133 | 43994     |       | 29.367 | 32690     | 33.250 |
| 05 AFTOUT-EXPLSV-BT-FB | 77513     |       | 23.150 | 46045     |       | 29.433 | 35691     | 33.317 |
| 06 AFTOUT-EXPLSV-BT-FX | 77318     |       | 23.133 | 42016     |       | 29.417 | 31104     | 33.317 |

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L963Lab File ID (Standard): V021702Date Analyzed: 02/17/96Instrument ID: 4500VTime Analyzed: 0923

|                         | IS1 (DCB) |       | IS2 (NPT) |        | IS3 (ANT) |        |
|-------------------------|-----------|-------|-----------|--------|-----------|--------|
|                         | AREA #    | RT    | AREA #    | RT     | AREA #    | RT     |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| 12 HOUR STD             | 15343     | 9.033 | 79377     | 12.933 | 55942     | 18.517 |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| UPPER LIMIT             | 30686     | 9.53  | 158754    | 13.43  | 111884    | 19.02  |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| LOWER LIMIT             | 7672      | 8.53  | 39689     | 12.43  | 27971     | 18.02  |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.    |           |       |           |        |           |        |
| =====                   | =====     | ===== | =====     | =====  | =====     | =====  |
| 01 AFTIN-EXP-R2-FB      | 30444     | 8.933 | 113029    | 12.883 | 79977     | 18.500 |
| 02 SBLKSXLE0236-MB1     | 16389     | 9.050 | 92732     | 12.933 | 66762     | 18.500 |
| 03 SBLKSXLE0236-MB1 BS  | 18152     | 8.950 | 97286     | 12.900 | 67158     | 18.500 |
| 04 SBLKSXLE0236-MB1 BSD | 20937     | 8.933 | 110507    | 12.883 | 74066     | 18.500 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk

8C  
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): V021702

Date Analyzed: 02/17/96

Instrument ID: 4500V

Time Analyzed: 0923

|                         | IS4 (PHN) |        | IS5 (CRY) |        | IS6 (PRY) |        |
|-------------------------|-----------|--------|-----------|--------|-----------|--------|
|                         | AREA      | # RT   | AREA      | # RT   | AREA      | # RT   |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| 12 HOUR STD             | 99241     | 23.150 | 90900     | 29.350 | 70658     | 33.217 |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| UPPER LIMIT             | 198482    | 23.65  | 181800    | 29.85  | 141316    | 33.72  |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| LOWER LIMIT             | 49621     | 22.65  | 45450     | 28.85  | 35329     | 32.72  |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO.    |           |        |           |        |           |        |
| =====                   | =====     | =====  | =====     | =====  | =====     | =====  |
| 01 AFTIN-EXP-R2-FB      | 124952    | 23.167 | 105986    | 29.383 | 98126     | 33.233 |
| 02 SBLKSXLE0236-MB1     | 102014    | 23.150 | 110707    | 29.400 | 112424    | 33.267 |
| 03 SBLKSXLE0236-MB1 BS  | 104483    | 23.167 | 110278    | 29.383 | 112934    | 33.267 |
| 04 SBLKSXLE0236-MB1 BSD | 113166    | 23.150 | 126026    | 29.417 | 123967    | 33.300 |

IS4 (PHN) = Phenanthrene-d10  
IS5 (CRY) = Chrysene-d12  
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk



## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L963Lab File ID (Standard): V021902Date Analyzed: 02/19/96Instrument ID: 4500VTime Analyzed: 0921

|                      | IS1 (DCB) |       | RT    | IS2 (NPT) |       | RT     | IS3 (ANT) |        |
|----------------------|-----------|-------|-------|-----------|-------|--------|-----------|--------|
|                      | AREA      | #     |       | AREA      | #     |        | AREA      | #      |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | =====  |
| 12 HOUR STD          | 19365     |       | 9.017 | 100772    |       | 12.883 | 70013     | 18.467 |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | =====  |
| UPPER LIMIT          | 38730     |       | 9.52  | 201544    |       | 13.38  | 140026    | 18.97  |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | =====  |
| LOWER LIMIT          | 9683      |       | 8.52  | 50386     |       | 12.38  | 35007     | 17.97  |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO. |           |       |       |           |       |        |           |        |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | =====  |
| 01 AFTIN-EXP-R2-FX   | 30648     |       | 8.900 | 119152    |       | 12.850 | 78806     | 18.450 |
| 02 AFTIN-EXP-R3-FB   | 31178     |       | 8.883 | 126515    |       | 12.833 | 79483     | 18.450 |
| 03 AFTIN-EXP-R3-FX   | 33974     |       | 8.900 | 139098    |       | 12.833 | 87786     | 18.450 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L963Lab File ID (Standard): V021902Date Analyzed: 02/19/96Instrument ID: 4500VTime Analyzed: 0921

|                      | IS4 (PHN) |       |        | IS5 (CRY) |       | IS6 (PRY) |        |
|----------------------|-----------|-------|--------|-----------|-------|-----------|--------|
|                      | AREA      | #     | RT     | AREA      | #     | AREA      | RT     |
| =====                | =====     | ===== | =====  | =====     | ===== | =====     | =====  |
| 12 HOUR STD          | 108998    |       | 23.100 | 79531     |       | 56356     | 33.267 |
| =====                | =====     | ===== | =====  | =====     | ===== | =====     | =====  |
| UPPER LIMIT          | 217996    |       | 23.60  | 159062    |       | 112712    | 33.77  |
| =====                | =====     | ===== | =====  | =====     | ===== | =====     | =====  |
| LOWER LIMIT          | 54499     |       | 22.60  | 39766     |       | 28178     | 32.77  |
| =====                | =====     | ===== | =====  | =====     | ===== | =====     | =====  |
| CLIENT SAMPLE<br>NO. |           |       |        |           |       |           |        |
| =====                | =====     | ===== | =====  | =====     | ===== | =====     | =====  |
| 01 AFTIN-EXP-R2-FX   | 116641    |       | 23.100 | 99347     |       | 85554     | 33.333 |
| 02 AFTIN-EXP-R3-FB   | 125502    |       | 23.100 | 98644     |       | 79816     | 33.267 |
| 03 AFTIN-EXP-R3-FX   | 133650    |       | 23.100 | 111955    |       | 86832     | 33.300 |

IS4 (PHN) = Phenanthrene-d10  
 IS5 (CRY) = Chrysene-d12  
 IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L963Lab File ID (Standard): V022002Date Analyzed: 02/20/96Instrument ID: 4500VTime Analyzed: 1149

|                      | IS1 (DCB) |       |       | IS2 (NPT) |       |        | IS3 (ANT) |       |        |
|----------------------|-----------|-------|-------|-----------|-------|--------|-----------|-------|--------|
|                      | AREA      | #     | RT    | AREA      | #     | RT     | AREA      | #     | RT     |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | ===== | =====  |
| 12 HOUR STD          | 21792     |       | 8.967 | 104115    |       | 12.867 | 71555     |       | 18.467 |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | ===== | =====  |
| UPPER LIMIT          | 43584     |       | 9.47  | 208230    |       | 13.37  | 143110    |       | 18.97  |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | ===== | =====  |
| LOWER LIMIT          | 10896     |       | 8.47  | 52058     |       | 12.37  | 35778     |       | 17.97  |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | ===== | =====  |
| CLIENT SAMPLE<br>NO. |           |       |       |           |       |        |           |       |        |
| =====                | =====     | ===== | ===== | =====     | ===== | =====  | =====     | ===== | =====  |
| 01 AFTIN-EXP-R2-COND | 30183     |       | 9.050 | 103002    |       | 12.900 | 69536     |       | 18.467 |
| 02 AFTIN-EXP-R3-COND | 29088     |       | 8.900 | 104139    |       | 12.850 | 72970     |       | 18.467 |

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

# Column used to flag internal standard area values with an asterisk

## SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.Contract: 2281-12-12Case No.: COE-HOT GASRFW Lot: 9602L963Lab File ID (Standard): V022002Date Analyzed: 02/20/96Instrument ID: 4500VTime Analyzed: 1149

|                      | IS4 (PHN) |        | IS5 (CRY) |        | IS6 (PRY) |        |
|----------------------|-----------|--------|-----------|--------|-----------|--------|
|                      | AREA #    | RT     | AREA #    | RT     | AREA #    | RT     |
| =====                | =====     | =====  | =====     | =====  | =====     | =====  |
| 12 HOUR STD          | 111985    | 23.100 | 77647     | 29.433 | 53462     | 33.300 |
| =====                | =====     | =====  | =====     | =====  | =====     | =====  |
| UPPER LIMIT          | 223970    | 23.60  | 155294    | 29.93  | 106924    | 33.80  |
| =====                | =====     | =====  | =====     | =====  | =====     | =====  |
| LOWER LIMIT          | 55993     | 22.60  | 38824     | 28.93  | 26731     | 32.80  |
| =====                | =====     | =====  | =====     | =====  | =====     | =====  |
| CLIENT SAMPLE<br>NO. |           |        |           |        |           |        |
| =====                | =====     | =====  | =====     | =====  | =====     | =====  |
| 01 AFTIN-EXP-R2-COND | 102648    | 23.117 | 77004     | 29.417 | 63466     | 33.283 |
| 02 AFTIN-EXP-R3-COND | 112825    | 23.117 | 82797     | 29.367 | 67600     | 33.233 |

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk

**SAMPLE DATA**

**ADDITIONAL DOCUMENTATION**

## SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 02/08/96

Extraction Batch No: 96LLC017

Analyst: GL

Method: \*\*\*\*

Test: 0833

Cleanup Date:

Analyst:

Client: COE-HOT GAS

LIMS Report Date: 02/09/96

Solvent: DCM/ACETONE TO ACN

Adsorbent:

| Sample No:      | Client Name<br>Client ID | pH | Initial Surr.<br>WT/VOL | Spike<br>Mult. | Final<br>VOL | Split<br>Mult. | GPC<br>Y/N | % Solids | C/D<br>FACTOR |
|-----------------|--------------------------|----|-------------------------|----------------|--------------|----------------|------------|----------|---------------|
| 9602L916-       | COE-HOT GAS              |    |                         |                |              |                |            |          |               |
| 006 0           | IN/OUT-EXP/SV-SB-ACE     | 7  | 1                       | 1.0            | 10           | 2.0            | N          | 0.0      | 20.0          |
| 020 0           | AFTOUT-EXP/SV-R1-FB      | 7  | 1                       | 1.0            | 10           | 2.0            | N          | 0.0      | 20.0          |
| 023 0           | AFTIN-EXP-R1-FB          | 7  | 1                       | 1.0            | 10           | 2.0            | N          |          | 20.0          |
| 025 0           | AFTIN-EXP-R1MS-FB        | 7  | 1                       | 1.0            | 10           | 2.0            | N          |          | 20.0          |
| 9602L963-       | COE-HOT GAS              |    |                         |                |              |                |            |          |               |
| 026 0           | AFTOUT-EXPLSV-R2-FB      | 7  | 1                       | 1.0            | 10           | 2.0            | N          |          | 20.0          |
| 028 0           | AFTOUT-EXPLSV-R3-FB      | 7  | 1                       | 1.0            | 10           | 2.0            | N          |          | 20.0          |
| 030 0           | AFTOUT-EXPLSV-BT-FB      | 7  | 1                       | 1.0            | 10           | 2.0            | N          |          | 20.0          |
| 032 0           | AFTIN-EXP-R2-FB          | 7  | 1                       | 1.0            | 10           | 2.0            | N          | 0.0      | 20.0          |
| 034 0           | AFTIN-EXP-R3-FB          | 7  | 1                       | 1.0            | 10           | 2.0            | N          | 0.0      | 20.0          |
| 96LLC017-MB1 0  | BLK                      | 7  | 1                       | 1.0            | 10           | 2.0            | N          |          | 20.0          |
| 96LLC017-MB1 0S | BLK                      | 7  | 1                       | 1.0            | 10           | 2.0            | N          |          | 20.0          |

Comments: ALL REQUIRED FILTRATION THROUGH SODIUM SULFATE

Surrogate: 50UL 41024101 1,2-DNB

Spike: 125UL 461129B

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
| N/A                  |                 |           |             |           |                     |

Car 2/9/96

## SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 02/09/96 Extraction Batch No: 96LE0209 Analyst: DW Method: SEPF

Test: 0625 Cleanup Date: Analyst: Client: COE-HOT GAS

Adsorbent:

LIMS Report Date: 02/15/96 Solvent: DCM

| Sample No:            | Client Name<br>Client ID | pH | Initial Surr.<br>WT/VOL | Spike Final<br>Mult. VOL | Split<br>Mult. | GPC<br>Y/N | Solids<br>FACTOR | C/D  |
|-----------------------|--------------------------|----|-------------------------|--------------------------|----------------|------------|------------------|------|
| 9602L916- COE-HOT GAS |                          |    |                         |                          |                |            |                  |      |
| 004 H                 | AFTOUT-EXP/SV-R1-CND     |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 006 H                 | IN/OUT-EXP/SV-SB-ACE     |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 009 H                 | IN/OUT-EXP/SV-SB-CND     |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 020 H                 | AFTOUT-EXP/SV-R1-FB      |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 021 H                 | AFTOUT-EXP/SV-R1-FX      |    | 25.0                    | 2.0                      | 12.5           | N          | 25.0             | 25.0 |
| 022 H                 | IN/OUT-EXP/SV-SB-FX      |    | 25.0                    | 2.0                      | 12.5           | N          | 25.0             | 25.0 |
| 9602L963- COE-HOT GAS |                          |    |                         |                          |                |            |                  |      |
| 004 H                 | AFTOUT-EXPLSV-R2COMP     |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 009 H                 | AFTOUT-EXPLSV-R3COND     |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 014 H                 | AFTOUT-EXPLSV-BTCOND     |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 026 H                 | AFTOUT-EXPLSV-R2-FB      |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 027 H                 | AFTOUT-EXPLSV-R2-FX      |    | 25.0                    | 2.0                      | 12.5           | N          | 25.0             | 25.0 |
| 028 H                 | AFTOUT-EXPLSV-R3-FB      |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 029 H                 | AFTOUT-EXPLSV-R3-FX      |    | 25.0                    | 2.0                      | 12.5           | N          | 25.0             | 25.0 |
| 030 H                 | AFTOUT-EXPLSV-BT-FB      |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 031 H                 | AFTOUT-EXPLSV-BT-FX      |    | 25.0                    | 2.0                      | 12.5           | N          | 25.0             | 25.0 |
| 96LE0209-MB1 H        | SBLKSO                   |    | 2.5                     | 2.0                      | 1.25           | N          | 2.5              | 2.5  |
| 96LE0209-MB1 HS       | SBLKSO                   |    | 2.5                     | 2.5                      | 1.25           | N          | 2.5              | 2.5  |
| 96LE0209-MB1 HT       | SBLKSO                   |    | 2.5                     | 2.5                      | 1.25           | N          | 2.5              | 2.5  |

## Comments:

Surrogate: 500 UL ESU 71A @ 100/200 UG/ML

Spike: 500 UL EMS 28 @ 100/200 UG/ML

| Extracts Transferred | Relinquished By | Date Time     | Received By | Date Time       | Reason for Transfer |
|----------------------|-----------------|---------------|-------------|-----------------|---------------------|
| 1.1/1A               | Anders          | 2/15/96 6:15P | C. Taylor   | 1809<br>2/15/96 | "partition"         |

surrogate,  
multiple  
4 GPC for blank



WESTON®

## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055

Extract Date: 2/7/96 Extraction Batch #: 46LLC013 SDG File Y/N: N/A  
 Analyst: F. Hagen Test: 1330 Method: RSC Solvent: ACN AAPrep: 1

| RFW # | (mL)<br>Vol        | Mtrx | pH | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-------|--------------------|------|----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|
| 1     | Blank (70)         | w    |    | 1.70                        | 1.0               | 1.0                | 10                   | 2             | N          |
| 2     | Blank Spike (70)   |      |    | 1                           |                   | 1.0                |                      |               |            |
| 3     | 9002L916-004 (580) |      |    | 1                           |                   |                    |                      |               |            |
| 4     | -009 (330)         |      |    | 1                           |                   |                    |                      |               |            |
| 5     | -013* (400)        |      |    | 1                           |                   |                    |                      |               |            |
| 6     | -018 (210)         |      |    | 1                           |                   |                    |                      |               |            |
| 7     |                    |      |    |                             |                   |                    |                      |               |            |
| 8     |                    |      |    |                             |                   |                    |                      |               |            |
| 9     |                    |      |    |                             |                   |                    |                      |               |            |
| 10    |                    |      |    |                             |                   |                    |                      |               |            |
| 11    |                    |      |    |                             |                   |                    |                      |               |            |
| 12    |                    |      |    |                             |                   |                    |                      |               |            |
| 13    |                    |      |    |                             |                   |                    |                      |               |            |
| 14    |                    |      |    |                             |                   |                    |                      |               |            |
| 15    |                    |      |    |                             |                   |                    |                      |               |            |
| 16    |                    |      |    |                             |                   |                    |                      |               |            |
| 17    |                    |      |    |                             |                   |                    |                      |               |            |
| 18    |                    |      |    |                             |                   |                    |                      |               |            |
| 19    |                    |      |    |                             |                   |                    |                      |               |            |
| 20    |                    |      |    |                             |                   |                    |                      |               |            |
| 21    |                    |      |    |                             |                   |                    |                      |               |            |
| 22    |                    |      |    |                             |                   |                    |                      |               |            |
| 23    |                    |      |    |                             |                   |                    |                      |               |            |
| 24    |                    |      |    |                             |                   |                    |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: N/AEnd time: 1

BN Fraction (Date/Time/Initials)

Start time: N/AEnd time: 1

## Extraction Information

(Date/Analyst)

Filtration: N/ABoildown: 1Blowdown: 1GPC Ready: 1GPC Cleanup: 1GPC #: 1After GPC Boildown: 1After GPC Blowdown: 1

Acid/Florisil/Alumina Cleanup:

N/APrep Sheet: 1/1/96GPC Lab ID #: N/AFlorisil Lot #: 1Florisil Lab ID #: 1

\* For Surr/Spike Mult, refer to  
Table 1 / 2 / 3 (circle one)

COMMENTS: Sample brought to Vienna (772mL) w/ D1 H2O

\* Bright yellow Extract → potentially high toxt Compds

Surrogate: 50ul 4102409 Spike: 125ul 46112913

This Page Reviewed By/Date: 1/1/96 Reviewed Against LIMS By/DATE: 1/1/96

WESTON®

## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055

Extract Date: 2/7/96 Extraction Batch #: 16-LC014 SDG File Y/N: \_\_\_\_\_  
 Analyst: G. Smith Test: 2330 Method: SDG Solvent: ACU AAPrep: \_\_\_\_\_

| RFW #           | Mtrx | pH | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-----------------|------|----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|
| 1: 9602L916-021 | Air  |    |                             | 10                |                    | 100                  | 2             | N          |
| 2: 022          |      |    |                             |                   |                    |                      |               |            |
| 3: 024          |      |    |                             |                   |                    |                      |               |            |
| 4: 026          |      |    |                             |                   |                    |                      |               |            |
| 5: Blank        |      |    |                             |                   |                    |                      |               |            |
| 6: 85           |      |    |                             | 10                |                    |                      |               |            |
| 7:              |      |    |                             |                   |                    |                      |               |            |
| 8:              |      |    |                             |                   |                    |                      |               |            |
| 9:              |      |    |                             |                   |                    |                      |               |            |
| 10:             |      |    |                             |                   |                    |                      |               |            |
| 11:             |      |    |                             |                   |                    |                      |               |            |
| 12:             |      |    |                             |                   |                    |                      |               |            |
| 13:             |      |    |                             |                   |                    |                      |               |            |
| 14:             |      |    |                             |                   |                    |                      |               |            |
| 15:             |      |    |                             |                   |                    |                      |               |            |
| 16:             |      |    |                             |                   |                    |                      |               |            |
| 17:             |      |    |                             |                   |                    |                      |               |            |
| 18:             |      |    |                             |                   |                    |                      |               |            |
| 19:             |      |    |                             |                   |                    |                      |               |            |
| 20:             |      |    |                             |                   |                    |                      |               |            |
| 21:             |      |    |                             |                   |                    |                      |               |            |
| 22:             |      |    |                             |                   |                    |                      |               |            |
| 23:             |      |    |                             |                   |                    |                      |               |            |
| 24:             |      |    |                             |                   |                    |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

Extraction Information

(Date/Analyst)

Filtration: \_\_\_\_\_

Boildown: \_\_\_\_\_

Blowdown: \_\_\_\_\_

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Boildown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup:

Prep Sheet: 2/8/96

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
Table 1 / 2 / 3 (circle one)

COMMENTS: Composite YAD + filter for the above numbered RFW. See CAC for  
original sample ID. 2/7/96  
 ON: 1550 2/7/96  
 OFF: 0950 2/8/96

Surrogate: 40-L41020716 1.20MB @ 1000 µg/mL Spike: 1.25 mL 461129B Witness: \_\_\_\_\_

This Page Reviewed By/Date: 1/1/96 Reviewed Against LIMS By/DATE: 2/2/96

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## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055Extract Date: 2/8/96Extraction Batch #: 46111615SDG File Y/N: N/AAnalyst: F. HipsTest: 8330Method: ESCESolvent: ACNAAPrep: I

| RFW # | Vol (mL)             | Mtrix | pH | Initial Wt/Vol (g/mL) | Surr Mult * | Spike Mult * | Final Vol (mL) | Split Mult | GPC Y/N |
|-------|----------------------|-------|----|-----------------------|-------------|--------------|----------------|------------|---------|
| 1     | Blank                | (770) | W  | 1 (770)               | 1           |              | 10             | 2          | N       |
| 2     | Blank (770)          |       |    |                       |             | 1            |                |            |         |
| 3     | 46024963 - 004 (550) |       |    |                       |             |              |                |            |         |
| 4     | -009 (539)           |       |    |                       |             |              |                |            |         |
| 5     | -014 (700)           |       |    |                       |             |              |                |            |         |
| 6     | -019 (710)           |       |    |                       |             |              |                |            |         |
| 7     | -024 (710)           |       |    |                       |             |              |                |            |         |
| 8     |                      |       |    |                       |             |              |                |            |         |
| 9     |                      |       |    |                       |             |              |                |            |         |
| 10    |                      |       |    |                       |             |              |                |            |         |
| 11    |                      |       |    |                       |             |              |                |            |         |
| 12    |                      |       |    |                       |             |              |                |            |         |
| 13    |                      |       |    |                       |             |              |                |            |         |
| 14    |                      |       |    |                       |             |              |                |            |         |
| 15    |                      |       |    |                       |             |              |                |            |         |
| 16    |                      |       |    |                       |             |              |                |            |         |
| 17    |                      |       |    |                       |             |              |                |            |         |
| 18    |                      |       |    |                       |             |              |                |            |         |
| 19    |                      |       |    |                       |             |              |                |            |         |
| 20    |                      |       |    |                       |             |              |                |            |         |
| 21    |                      |       |    |                       |             |              |                |            |         |
| 22    |                      |       |    |                       |             |              |                |            |         |
| 23    |                      |       |    |                       |             |              |                |            |         |
| 24    |                      |       |    |                       |             |              |                |            |         |

Acid Fraction or Pest/PCB or LC (Date/Time/Initials)

Start time: N/AEnd time: I

BN Fraction (Date/Time/Initials)

Start time: N/AEnd time: I

## Extraction Information

(Date/Analyst)

Filtration: N/ABoildown: IBlowdown: IGPC Ready: IGPC Cleanup: IGPC #: IAfter GPC Boildown: IAfter GPC Blowdown: IAcid/Florisil/Alumina Cleanup: IPrep Sheet: IGPC Lab ID #: IFlorisil Lot #: IFlorisil Lab ID #: I

\* For Surr/Spike Mult, refer to Table 1 / 2 / 3 (circle one)

COMMENTS: Samples brought to Volume (770mL) w/ DI H<sub>2</sub>O\* Bright Yellow Extracts previously high test compounds\*\* Sample 014 reduced 30mL acid after 15 min follow - 10mL (25mL) Split wateronly added 2mL acid on 22nd spike. 22mL IV used for Counts this spike.Surrogate: 50mL 46111615Spike: 125mL 46111613Witness: IThis Page Reviewed By/Date: I 2/8/96Reviewed Against LIMS By/DATE: I 2/8/96

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## LC - GC - GC/MS EXTRACTABLES

Logbook # 555Extract Date: 2/8/96Extraction Batch #: 96LC016

SDG File Y/N: \_\_\_\_\_

Analyst: SchellTest: 8330Method: SONICSolvent: ACN

AAPrep: \_\_\_\_\_

| RFW #                  | Mtx       | pH | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult<br>* | Spike<br>Mult<br>* | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|------------------------|-----------|----|-----------------------------|-------------------|--------------------|----------------------|---------------|------------|
| 1: <u>96021963-027</u> | <u>AR</u> |    |                             | <u>10</u>         |                    | <u>100</u>           | <u>2</u>      | <u>N</u>   |
| 2: <u>029</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 3: <u>031</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 4: <u>033</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 5: <u>035</u>          | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 6: <u>Blank</u>        | <u>↓</u>  |    |                             | <u>↓</u>          |                    | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 7: <u>BS</u>           | <u>↓</u>  |    |                             | <u>↓</u>          | <u>10</u>          | <u>↓</u>             | <u>↓</u>      | <u>↓</u>   |
| 8:                     |           |    |                             |                   |                    |                      |               |            |
| 9:                     |           |    |                             |                   |                    |                      |               |            |
| 10:                    |           |    |                             |                   |                    |                      |               |            |
| 11:                    |           |    |                             |                   |                    |                      |               |            |
| 12:                    |           |    |                             |                   |                    |                      |               |            |
| 13:                    |           |    |                             |                   |                    |                      |               |            |
| 14:                    |           |    |                             |                   |                    |                      |               |            |
| 15:                    |           |    |                             |                   |                    |                      |               |            |
| 16:                    |           |    |                             |                   |                    |                      |               |            |
| 17:                    |           |    |                             |                   |                    |                      |               |            |
| 18:                    |           |    |                             |                   |                    |                      |               |            |
| 19:                    |           |    |                             |                   |                    |                      |               |            |
| 20:                    |           |    |                             |                   |                    |                      |               |            |
| 21:                    |           |    |                             |                   |                    |                      |               |            |
| 22:                    |           |    |                             |                   |                    |                      |               |            |
| 23:                    |           |    |                             |                   |                    |                      |               |            |
| 24:                    |           |    |                             |                   |                    |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

## Extraction Information

(Date/Analyst)

Filtration: \_\_\_\_\_

Boildown: \_\_\_\_\_

Blowdown: \_\_\_\_\_

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Boildown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup:

Prep Sheet: 2/8/96

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
Table 1 / 2 / 3 (circle one)COMMENTS: KAD + Filter CompositesON 1430 2/8/96OFF 0830 2/8/96Surrogate: 40µL 4/1624716 120mg 100% Spike: 1.25mL 4/1611298

Witness: \_\_\_\_\_

This Page Reviewed By/Date: 2/14/96 2/8/96 Reviewed Against LIMS By/DATE: 2/8/96

WESTON®

## LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055

Extract Date: 2/8/96 Extraction Batch #: 96LLC017 SDG File Y/N: \_\_\_\_\_  
 Analyst: G. Weinmayer Test: 08330 Method: KD Solvent: ACN AAPrep: 2/8/96

| RFW # | Mtrx         | pH  | Initial<br>Vol (g/mL) | Surr<br>Mult | Spike<br>Mult | Final<br>Vol (mL) | Split<br>Mult | GPC<br>Y/N |
|-------|--------------|-----|-----------------------|--------------|---------------|-------------------|---------------|------------|
| 1     | 9602L916-006 | Sdo | 370                   | 1            |               | 10                | 2             | W          |
| 2     | -020         |     | 210                   |              |               |                   |               |            |
| 3     | -023         |     | 240                   |              |               |                   |               |            |
| 4     | -025         |     | 220                   |              |               |                   |               |            |
| 5     | 9602L963-026 |     | 240                   |              |               |                   |               |            |
| 6     | -028         |     | 210                   |              |               |                   |               |            |
| 7     | -030         |     | 180                   |              |               |                   |               |            |
| 8     | -032         |     | 235                   |              |               |                   |               |            |
| 9     | -034         |     | 325                   |              |               |                   |               |            |
| 10    | Blank        |     | 200                   |              |               |                   |               |            |
| 11    | Blank spike  |     | 200                   | 1            |               |                   |               |            |
| 12    |              |     |                       |              |               |                   |               |            |
| 13    |              |     |                       |              |               |                   |               |            |
| 14    |              |     |                       |              |               |                   |               |            |
| 15    |              |     |                       |              |               |                   |               |            |
| 16    |              |     |                       |              |               |                   |               |            |
| 17    |              |     |                       |              |               |                   |               |            |
| 18    |              |     |                       |              |               |                   |               |            |
| 19    |              |     |                       |              |               |                   |               |            |
| 20    |              |     |                       |              |               |                   |               |            |
| 21    |              |     |                       |              |               |                   |               |            |
| 22    |              |     |                       |              |               |                   |               |            |
| 23    |              |     |                       |              |               |                   |               |            |
| 24    |              |     |                       |              |               |                   |               |            |

*G. Weinmayer 2/9/96*

**Acid Fraction or Pest/PCB or LC (Date/Time/Initials)**  
 Start time: \_\_\_\_\_  
 End time: \_\_\_\_\_

**BN Fraction (Date/Time/Initials)**  
 Start time: \_\_\_\_\_  
 End time: \_\_\_\_\_

**Extraction Information (Date/Analyst)**  
 Filtration: \_\_\_\_\_  
 Boildown: \_\_\_\_\_  
 Blowdown: \_\_\_\_\_  
 GPC Ready: \_\_\_\_\_  
 GPC Cleanup: \_\_\_\_\_  
 GPC #: \_\_\_\_\_  
 After GPC Boildown: \_\_\_\_\_  
 After GPC Blowdown: \_\_\_\_\_  
 Acid/Florisil/Alumina Cleanup: \_\_\_\_\_

Prep Sheet: 2/9/96 Gm  
 GPC Lab ID #: \_\_\_\_\_  
 Florisil Lot #: \_\_\_\_\_  
 Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to Table 1 / 2 / 3 (circle one)

COMMENTS: DEW/ACETONE SD.SD used for B & BS  
All initial volumes to be logged in as 1 for total vol.  
Water in all samples requiring Sodium Sulfate filtering

Surrogate: Sub 4102410/1200NB Spike: 461129B 125 uL Witness: \_\_\_\_\_  
 This Page Reviewed By/Date: [Signature] 2/12/96 Reviewed Against LIMS By/DATE: [Signature]

Extract Date: 2/9/96 Extraction Batch #: 96LE0209 SDG File Y/N: ARM 2/10  
 Analyst: RM Test: OG-25H Method: Sept. Solvent: DCM AAPrep: D.O. 2/9/96

| RFW #           | Mtrx | pH  | Initial<br>Vol/Vol<br>(g/mL) | Surr<br>Mult | Spike<br>Mult | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-----------------|------|-----|------------------------------|--------------|---------------|----------------------|---------------|------------|
| 1: 9602L916-004 | W    | N/A | N/A                          | 25           |               | 2.0                  | 1.25          | N          |
| 2: -006         |      |     |                              |              |               |                      |               |            |
| 3: -009         |      |     |                              |              |               |                      |               |            |
| 4: -020         |      |     |                              |              |               |                      |               |            |
| 5: -021         |      |     |                              | 25           |               |                      | 12.5          |            |
| 6: -022         |      |     |                              | 1            |               |                      | 1             |            |
| 7: 9602L963-004 |      |     |                              | 25           |               |                      | 1.25          |            |
| 8: -009         |      |     |                              | 1            |               |                      |               |            |
| 9: -014         |      |     |                              | 1            |               |                      |               |            |
| 10: -026        |      |     |                              | 1            |               |                      |               |            |
| 11: -027        |      |     |                              | 25           |               |                      | 12.5          |            |
| 12: -028        |      |     |                              | 25           |               |                      | 1.25          |            |
| 13: -029        |      |     |                              | 25           |               |                      | 12.5          |            |
| 14: -030        |      |     |                              | 25           |               |                      | 1.25          |            |
| 15: -031        |      |     |                              | 25           |               |                      | 12.5          |            |
| 16: Blank       |      | 7.0 | 1000                         | 25           |               |                      | 1.25          |            |
| 17: BS          |      |     |                              |              | 2.5           |                      |               |            |
| 18: BSD         |      |     |                              |              |               |                      |               |            |
| 19:             |      |     |                              |              |               |                      |               |            |
| 20:             |      |     |                              |              |               |                      |               |            |
| 21:             |      |     |                              |              |               |                      |               |            |
| 22:             |      |     |                              |              |               |                      |               |            |
| 23:             |      |     |                              |              |               |                      |               |            |
| 24:             |      |     |                              |              |               |                      |               |            |

Acid Fraction or Pest/PCB  
or LC (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_

End time: \_\_\_\_\_

### Extraction Information

(Date/Analyst)

Filtration: 2/9/96 RM

Boildown: 1

Blowdown: 2/10/96 ARM

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Boildown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup: \_\_\_\_\_

Prep Sheet: ARM 2/10/96

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
Table 8/2/3 (circle one)

COMMENTS: 4<sup>was</sup> mL of extract delivered into 200 mL of DI H<sub>2</sub>O in septfunnel.  
Revision of the prepsheet, reflecting 4mL aliquots taken from  
10mL and 100mL F.V.s of explosive extracts, was performed  
on 2/14/96 by D.O. per ID instruction D.O. 2/14/96.

Surrogate: 500uL 2/88 ESU-71A 33117501 Spike: 500uL 2/88 EMS-28 33117302 @ 100-200-3mL  
 This Page Reviewed By/Date: ARM 2/16/96 Reviewed Against LIMS By/DATE: ARM 2/16/96

Extract Date: 2/14/96 Extraction Batch #: 96LE 0236 SDG File #/N: ARM 2/14/96  
 Analyst: MT Test: 0625H Method: SEPT Solvent: DCM AAPrep: ARM 2/15/96

| RFW # | Mtrx          | pH      | Initial<br>Wt/Vol<br>(g/mL) | Surr<br>Mult | Spike<br>Mult | Final<br>Vol<br>(mL) | Split<br>Mult | GPC<br>Y/N |
|-------|---------------|---------|-----------------------------|--------------|---------------|----------------------|---------------|------------|
| 1     | 9602 L916-013 | N/A     | N/A                         | 2.5          |               | 2.0                  | 1.25          | N          |
| 2     | 018           |         |                             | 2.5          |               | 1                    | 1.25          |            |
| 3     | 024           |         |                             | 2.5          |               |                      | 12.5          |            |
| 4     | 026           |         |                             | 2.5          |               |                      | 12.5          |            |
| 5     | 023           |         |                             | 2.5          |               |                      | 1.25          |            |
| 6     | 025           |         |                             | 2.5          |               |                      | 1.25          |            |
| 7     | 963-019       |         |                             | 1            |               |                      | 1.25          |            |
| 8     | -024          |         |                             |              |               |                      | 1.25          |            |
| 9     | -032          |         |                             |              |               |                      | 1.25          |            |
| 10    | -033          |         |                             | 2.5          |               |                      | 12.5          |            |
| 11    | -034          |         |                             | 2.5          |               |                      | 1.25          |            |
| 12    | -035          |         |                             | 2.5          |               |                      | 12.5          |            |
| 13    | Blank         |         |                             | 2.5          |               |                      | 1.25          |            |
| 14    | B3            |         |                             |              | 0.025         |                      | 1.25          |            |
| 15    | BSD           |         |                             |              | 1.025         |                      | 1.25          |            |
| 16    |               |         |                             |              |               | D.O. 2/14/96         |               |            |
| 17    |               | D.O.    |                             |              |               |                      |               |            |
| 18    |               | 2/14/96 |                             |              |               |                      |               |            |
| 19    |               |         |                             |              |               |                      |               |            |
| 20    |               |         |                             |              |               |                      |               |            |
| 21    |               |         |                             |              |               |                      |               |            |
| 22    |               |         |                             |              |               |                      |               |            |
| 23    |               |         |                             |              |               |                      |               |            |
| 24    |               |         |                             |              |               |                      |               |            |

Acid Fraction or Pest/PCB  
 or LC (Date/Time/Initials)

Start time: \_\_\_\_\_  
 End time: \_\_\_\_\_

BN Fraction (Date/Time/Initials)

Start time: \_\_\_\_\_  
 End time: \_\_\_\_\_

### Extraction Information

(Date/Analyst)

Filtration: 2/14/96 MT

Boildown: 2/14/96 BW

Blowdown: 2/15/96 D.O.

GPC Ready: \_\_\_\_\_

GPC Cleanup: \_\_\_\_\_

GPC #: \_\_\_\_\_

After GPC Boildown: \_\_\_\_\_

After GPC Blowdown: \_\_\_\_\_

Acid/Florisil/Alumina Cleanup: \_\_\_\_\_

Prep Sheet: D.O. 2/15/96

GPC Lab ID #: \_\_\_\_\_

Florisil Lot #: \_\_\_\_\_

Florisil Lab ID #: \_\_\_\_\_

\* For Surr/Spike Mult, refer to  
 Table 2/3 (circle one)

### COMMENTS:

PH & Initial Volume was not applicable according to  
Schedule. MT 2/14/96 samples are air - therefore  
pH and init. vol. - not needed. D.O. 2/14/96.

\* Surr. and spike multiplier changed to accom. GC/MS SUDA calculations per S.Du  
33117SD1

Surrogate: 500 LLES/171A @ 100/200V71ml Spike: 500 LLES/28 33117302 @ 100/200V71ml Witness: MT

This Page Reviewed By/Date: D.O. 2/15/96 Reviewed Against LIMS By/DATE: ARM 2/16/96



**END OF DATA PACKAGE**

~~457~~  
COP 12/14/6 1458



Roy F. Weston, Inc. - Lionville Laboratory  
VOST ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/02/96

RFW LOT # :9602L915

| CLIENT ID           | RFW # | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|-------|-----|----------|------------|-----------|----------|
| AFTOUT-VOST-R1-TP1F | 001   | AI  | 96LVX020 | 01/31/96   | N/A       | 02/07/96 |
| AFTOUT-VOST-R1-TP1B | 002   | AI  | 96LVQ015 | 01/31/96   | N/A       | 02/10/96 |
| AFTOUT-VOST-R1-TP2B | 004   | AI  | 96LVQ015 | 01/31/96   | N/A       | 02/10/96 |
| AFTOUT-VOST-R1-TP3F | 005   | AI  | 96LVX020 | 01/31/96   | N/A       | 02/07/96 |
| AFTOUT-VOST-R1-TP3B | 006   | AI  | 96LVQ014 | 01/31/96   | N/A       | 02/09/96 |
| AFTOUT-VOST-R1-TP4F | 007   | AI  | 96LVX020 | 01/31/96   | N/A       | 02/07/96 |
| AFTOUT-VOST-R1-TP4B | 008   | AI  | 96LVQ014 | 01/31/96   | N/A       | 02/09/96 |
| AFTOUT-VOST-R1-TP5F | 009   | AI  | 96LVX020 | 01/31/96   | N/A       | 02/07/96 |
| AFTOUT-VOST-R1-TP5B | 010   | AI  | 96LVQ014 | 01/31/96   | N/A       | 02/09/96 |
| AFTOUT-VOST-R1-TP6B | 012   | AI  | 96LVQ014 | 01/31/96   | N/A       | 02/09/96 |
| AFTOUT-VOST-BT-TP1F | 013   | AI  | 96LVX020 | 01/31/96   | N/A       | 02/07/96 |
| AFTOUT-VOST-BT-TP1B | 014   | AI  | 96LVQ014 | 01/31/96   | N/A       | 02/09/96 |
| AFTOUT-VOST-R1-COND | 015   | W   | 96LVK031 | 01/31/96   | N/A       | 02/09/96 |
| OUT-VOST-SB-COND    | 016   | W   | 96LVK031 | 01/31/96   | N/A       | 02/09/96 |

LAB QC:

|        |        |    |          |     |     |          |
|--------|--------|----|----------|-----|-----|----------|
| VELKRC | MB1    | AI | 96LVX020 | N/A | N/A | 02/07/96 |
| VELKRC | MB1 BS | AI | 96LVX020 | N/A | N/A | 02/07/96 |
| VELKRU | MB1    | AI | 96LVQ015 | N/A | N/A | 02/10/96 |
| VELKRV | MB1    | AI | 96LVQ014 | N/A | N/A | 02/09/96 |
| VELKRV | MB1 BS | AI | 96LVQ014 | N/A | N/A | 02/09/96 |
| VELKRO | MB1    | W  | 96LVK031 | N/A | N/A | 02/09/96 |
| VELKRO | MB1 BS | W  | 96LVK031 | N/A | N/A | 02/09/96 |

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| 3. Raw Data                                                  |         |
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| b. Quantitation Report(s)                                    |         |
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**CHAIN OF CUSTODY**



**DATA SUMMARY**

# Roy F. Weston, Inc. - Lionville Laboratory

Report Date: 02/20/96 14:29

VOST TUBE BY GC/MS

RFW Batch Number: 9602L915

Client: COE-HOT GAS

Work Order: 02281012012 Page: 1a

Cust ID: AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST-

R1-TP1F 001 AIR 1.00 total ng R1-TP1B 002 AIR 1.00 total ng R1-TP2B 004 AIR 1.00 total ng R1-TP3F 005 AIR 1.00 total ng R1-TP3B 006 AIR 1.00 total ng R1-TP4F 007 AIR 1.00 total ng

| Sample Information         | RFW#: | Matrix: | D.F.: | Units: | total ng | total ng | total ng | total ng | total ng | total ng |
|----------------------------|-------|---------|-------|--------|----------|----------|----------|----------|----------|----------|
| Surrogate                  | 102   | %       | 79    | %      | 87       | %        | 104      | %        | 96       | %        |
| Bromofluorobenzene         | 112   | %       | 117   | %      | 113      | %        | 116      | %        | 130      | %        |
| Recovery                   | 109   | %       | 84    | %      | 93       | %        | 103      | %        | 99       | %        |
| 1,2-Dichloroethane-d4      | 50    | U       | 1000  | J      | 160      | U        | 50       | U        | 50       | U        |
| Chloromethane              | 48    | JB      | 33    | J      | 87       | U        | 50       | U        | 530      | U        |
| Bromomethane               | 50    | U       | 50    | U      | 50       | U        | 50       | U        | 50       | U        |
| Vinyl Chloride             | 50    | U       | 50    | U      | 50       | U        | 50       | U        | 50       | U        |
| Chloroethane               | 16    | JB      | 50    | B      | 21       | JB       | 16       | JB       | 35       | B        |
| Methylene Chloride         | E     | 2400    | 25    | U      | 360      | J        | 1400     | U        | 500      | U        |
| Acetone                    | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| Carbon Disulfide           | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| 1,1-Dichloroethene         | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| 1,1-Dichloroethane         | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| 1,2-Dichloroethene (trans) | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| Chloroform                 | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| 1,2-Dichloroethane         | 500   | U       | 500   | U      | 500      | U        | 500      | U        | 500      | U        |
| 2-Butanone                 | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| 1,1,1-Trichloroethane      | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| Carbon Tetrachloride       | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| Vinyl Acetate              | 100   | U       | 100   | U      | 100      | U        | 100      | U        | 100      | U        |
| Bromodichloromethane       | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| 1,2-Dichloropropane        | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| cis-1,3-Dichloropropene    | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| Trichloroethene            | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| Dibromochloromethane       | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| 1,1,2-Trichloroethane      | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| Benzene                    | 91    | B       | 8     | JB     | 6        | JB       | 38       | B        | 8        | JB       |
| Trans-1,3-Dichloropropene  | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| Bromoform                  | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| 4-Methyl-2-pentanone       | 500   | U       | 500   | U      | 500      | U        | 500      | U        | 500      | U        |
| 2-Hexanone                 | 500   | U       | 500   | U      | 500      | U        | 500      | U        | 500      | U        |
| Tetrachloroethene          | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |
| 1,1,2,2-Tetrachloroethane  | 25    | U       | 25    | U      | 25       | U        | 25       | U        | 25       | U        |

\*= Outside of EPA CLP QC limits.

RFW Batch Number: 9602L915

Client: COE-HOT GAS

Work Order: 02281012012

Page: 1b

Cust ID:

AFTOUT-VOST- R1-TP1F 001 AFTOUT-VOST- R1-TP1B 002 AFTOUT-VOST- R1-TP2B 004 AFTOUT-VOST- R1-TP3F 005 AFTOUT-VOST- R1-TP3B 006 AFTOUT-VOST- R1-TP4F 007

RFW#:

Toluene  
Chlorobenzene  
Ethylbenzene  
Styrene  
Xylene (total)  
2-chloroethylvinylether

\*= Outside of EPA CLP QC limits.

200

# Roy F. Weston, Inc. Lionville Laboratory

Report Date: 02/20/96 14:29  
 VOST TUBE BY GC/MS  
 Work Order: 02281012012 Page: 2a

RFW Batch Number: 96021915

Client: COE-HOT GAS

Cust ID: AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST-  
 R1-TP4B R1-TP5F R1-TP5B R1-TP6B BT-TP1F BT-TP1B  
 RFW#: 008 009 010 012 013 014  
 Matrix: AIR AIR AIR AIR AIR AIR  
 D.F.: 1.00 1.00 1.00 1.00 1.00 1.00  
 Units: total ng total ng total ng total ng total ng total ng

| Toluene-d8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                       | 106   | 111 | 118   | 137   | 97  | 125 | % |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------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| Surrogate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Bromofluorobenzene    | 171 * | 133 | 189 * | 219 * | 114 | 112 | % |
| Recovery                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1,2-Dichloroethane-d4 | 109   | 115 | 112   | 130   | 102 | 100 | % |
| 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|                       |       |     |       |       |     |     |   |

\*= Outside of EPA CLP QC limits.



Cust ID: AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST-  
 R1-TP4B R1-TP5F R1-TP5B R1-TP6B BT-TP1F BT-TP1B  
 008 009 010 012 013 014

RFW#:

|                         |     |   |     |   |     |   |     |   |     |    |     |   |
|-------------------------|-----|---|-----|---|-----|---|-----|---|-----|----|-----|---|
| Toluene                 | 5   | J | 31  | B | 4   | J | 12  | J | 15  | JB | 25  | U |
| Chlorobenzene           | 25  | U | 25  | U | 25  | U | 10  | J | 25  | U  | 25  | U |
| Ethylbenzene            | 25  | U | 25  | U | 25  | U | 7   | J | 25  | U  | 25  | U |
| Styrene                 | 25  | U | 9   | J | 25  | U | 8   | J | 25  | U  | 25  | U |
| Xylene (total)          | 25  | U | 25  |   | 4   | J | 20  | J | 11  | J  | 25  | U |
| 2-chloroethylvinylether | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U  | 100 | U |

\*= Outside of EPA CLP QC limits.

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Page: 3b

**VBLKRD**

**96LVQ015-MB1**

\*= Outside of EPA CLP QC limits.

RFW Batch Number: 96021915

Client: COE-HOT GAS

Cust ID: VBLKRV BS VBLKRO VBLKRO BS

Sample Information RFW#: 96LVQ014-MB1 96LVK031-MB1 96LVK031-MB1

Matrix: AIR WATER WATER

D.F.: 1.00 1.00 1.00

Units: total ng ug/L ug/L

| Surrogate                      | Toluene-d8 | 111 | 99  | 98 |    |
|--------------------------------|------------|-----|-----|----|----|
| Bromofluorobenzene             | 93         | 90  | 93  |    |    |
| Recovery 1,2-Dichloroethane-d4 | 96         | 90  | 98  |    |    |
| Chloromethane                  | 52         | 10  | 10  | 10 | U  |
| Bromomethane                   | 50         | 10  | 10  | 10 | U  |
| Vinyl Chloride                 | 50         | 10  | 10  | 10 | U  |
| Chloroethane                   | 50         | 10  | 10  | 10 | U  |
| Methylene Chloride             | 20         | 2   | 4   | 4  | JB |
| Acetone                        | 500        | 10  | 10  | 10 | U  |
| Carbon Disulfide               | 25         | 5   | 5   | 5  | U  |
| 1,1-Dichloroethene             | 108        | 5   | 114 | 5  | U  |
| 1,1-Dichloroethane             | 25         | 5   | 5   | 5  | U  |
| 1,2-Dichloroethene (trans)     | 25         | 5   | 5   | 5  | U  |
| Chloroform                     | 25         | 5   | 5   | 5  | U  |
| 1,2-Dichloroethane             | 25         | 5   | 5   | 5  | U  |
| 2-Butanone                     | 500        | 10  | 10  | 10 | U  |
| 1,1,1-Trichloroethane          | 25         | 5   | 5   | 5  | U  |
| Carbon Tetrachloride           | 25         | 5   | 5   | 5  | U  |
| Vinyl Acetate                  | 100        | 10  | 10  | 10 | U  |
| Bromodichloromethane           | 25         | 5   | 5   | 5  | U  |
| 1,2-Dichloropropane            | 25         | 5   | 5   | 5  | U  |
| cis-1,3-Dichloropropene        | 25         | 5   | 5   | 5  | U  |
| Trichloroethene                | 90         | 5   | 115 | 5  | U  |
| Dibromochloromethane           | 25         | 5   | 5   | 5  | U  |
| 1,1,2-Trichloroethane          | 25         | 5   | 5   | 5  | U  |
| Benzene                        | 89         | 5   | 114 | 5  | U  |
| Trans-1,3-Dichloropropene      | 25         | 5   | 5   | 5  | U  |
| Bromoform                      | 25         | 5   | 5   | 5  | U  |
| 4-Methyl-2-pentanone           | 500        | 10  | 10  | 10 | U  |
| 2-Hexanone                     | 500        | 10  | 10  | 10 | U  |
| Tetrachloroethene              | 25         | 5   | 5   | 5  | U  |
| 1,1,2,2-Tetrachloroethane      | 25         | 5   | 5   | 5  | U  |

\* = Outside of EPA CLP QC limits.

Cust ID: VBLKRV BS VBLKRO VBLKRO BS

RFW#: 96LVQ014-MB1 96LVK031-MB1 96LVK031-MB1

|                         |     |   |    |   |     |   |
|-------------------------|-----|---|----|---|-----|---|
| Toluene                 | 96  | % | 5  | U | 108 | % |
| Chlorobenzene           | 97  | % | 5  | U | 105 | % |
| Ethylbenzene            | 25  | U | 5  | U | 5   | U |
| Styrene                 | 25  | U | 5  | U | 5   | U |
| Xylene (total)          | 25  | U | 5  | U | 5   | U |
| 2-chloroethylvinylether | 100 | U | 10 | U | 10  | U |

\*= Outside of EPA CLP QC limits.

013

**CASE NARRATIVE**



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
® 610-701-6100 • Fax 610-701-6140

## LIONVILLE LABORATORY ANALYTICAL REPORT

Client : COE-HOT GAS  
RFW # : 9602L915

W.O #: 02281-012-012-1200-00  
Date Received: 02 February 1996

### GC/MS VOLATILE

The set of samples consisted of two (2) water samples and seven (7) air samples collected on VOST cartridges {i.e., pairs - front (tenax) and back (tenax/charcoal)} on 31 January 1996.

The samples were analyzed according to criteria set forth in SW 846 Method 5040/8240 for Volatile Organic target compounds on 07,09,10 February 1996.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

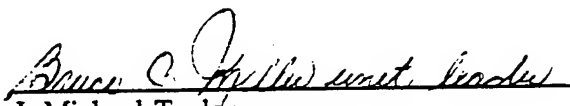
1. The analyses of samples AFTOUT-VOST-R1-TP2F and AFTOUT-VOST-R1-TP6F were lost due to an instrument malfunction. A copy of the Sample Discrepancy Report (SDR) has been included in Section I (Case Narrative).
2. The required holding time for analysis was met.
3. Non-target compounds were detected in these samples.
4. Three (3) of sixty-three (63) surrogate recoveries were outside QC limits.
5. All blank spike recoveries were within QC limits.
6. The method blanks contained the common contaminant Methylene Chloride at levels less than 3x the CRQL. The air method blanks also contained the target compound Benzene at levels less than the CRQL; the method blank 96LVX020-MB1 also contained the target compounds Bromomethane and Toluene at levels less than the CRQL; and the method blank 96LVQ014-MB1 also contained the target compound Chloromethane at a level less than the CRQL.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 372 pages.





7. All internal standard area and retention time criteria were met.
8. The calibration data has been reported using CLP Forms 6 and 7; however, VOST calibrations should not be expected to meet the calibration criteria specified on these forms.
9. The sample IDs were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters. The IDs were additionally truncated on some forms and the final character, which distinguished front from back, was deleted; in these cases, the odd RFW #s (e.g., 001, 003) represent the front(tenax) and the even RFW #s represent the back (tenax/charcoal).

  
FOR J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2-21-96

Date



## GLOSSARY OF VOA DATA

### DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.



## GLOSSARY OF VOA DATA

### ABBREVIATIONS

|       |   |                                                                                                                                                                                  |
|-------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BS    | = | Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported. |
| BSD   | = | Indicates blank spike duplicate.                                                                                                                                                 |
| MS    | = | Indicates matrix spike.                                                                                                                                                          |
| MSD   | = | Indicates matrix spike duplicate.                                                                                                                                                |
| DL    | = | Suffix added to sample number to indicate that results are from a diluted analysis.                                                                                              |
| NA    | = | Not Applicable.                                                                                                                                                                  |
| DF    | = | Dilution Factor.                                                                                                                                                                 |
| NR    | = | Not Required.                                                                                                                                                                    |
| SP, Z | = | Indicates Spiked Compound.                                                                                                                                                       |

## TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP - Missed Peak: manually added peak not found by automatic quan program.
- PA - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

# WESTON® Sample Discrepancy Report (SDR)

SDR #:

96022915

Initiator: Jeffrey B Smith  
Date: 2/8/96  
Client: COE - HOT GAS

RFW Batch: 96022915  
Samples: -003 -011  
Method: SW846/MCAWW/CLP/

Parameter: MS VOL  
Matrix: Air  
Prep Batch:

## 1. Reason for SDR

- a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C  
☐ Transcription Error ☐ Wrong Test Code ☐ Other
- b. General Discrepancy  
☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date:

## c. QC Problem (Include all relevant specific results; attach data if necessary)

Date results for the analyses of -003 and -011 were not obtained due to a computer malfunction during data acquisition.  
instrument 2/8/96 (acquisition terminated)

## 2. Known or Probable Causes(s)

## 3. Discussion and Proposed Action

Other Description:

- ☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

have moved JOST analyses to another instrument and called for service

## 4. Project Manager Instructions...signature/date:

- ☐ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☒ Client Contacted;  
Date/Person 2/14/96  
☐ Add  
☒ Cancel samples 003, 011

## 5. Final Action...signature/date:

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)  
☐ Included in Case Narrative  
☒ Hard Copy COC Revised  
☒ Electronic COC Revised  
☐ EDD Corrections Completed

Other Explanation:

these cancelled in LIMS on 2/16/96 by the M group  
SDR Rec'd Log-in 2/19/96

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR  
☒ Initiator Jeff Smith  
☒ Lab Manager: J. Michael Taylor  
☒ Project Mgr: Kelly Baker  
☒ Section Mgr: Sierly/Durke/Daniels  
☒ QA Section Mgr: Dianne Therry  
☒ QA File: Feldman/Racioppi/Shaffer  
☒ Data Reporting: Som Basuthakur  
☐ Sample Prep: Osei-Mensah/Swisher

Route Distribution of Completed SDR  
☐ Metals: Reichner/Doughty  
☐ Inorganic: Perrone/Leonards  
☐ GC/LC: Jarvis/Skrzat/Schnell  
☐ MS: LeMin/McIntyre/Taylor/Kasdras/Steele  
☐ Log-in: Geiger  
☐ EDD: Miller  
☐ Admin: Brewer/Keehn/Edgington  
☐ Other:

**QC SUMMARY**

2A  
AIR VOLATILE SURROGATE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

|    | EPA<br>SAMPLE NO.   | S1<br>(DCE) # | S2<br>(TOL) # | S3<br>(BFB) # | OTHER | TOT<br>OUT |
|----|---------------------|---------------|---------------|---------------|-------|------------|
|    | =====               | =====         | =====         | =====         | ===== | =====      |
| 01 | VLKRC               | 105           | 108           | 102           |       | 0          |
| 02 | VLKRCMS             | 107           | 109           | 99            |       | 0          |
| 03 | AFTOUT-VOST-R1-TP1F | 109           | 102           | 112           |       | 0          |
| 04 | AFTOUT-VOST-R1-TP3F | 103           | 104           | 116           |       | 0          |
| 05 | AFTOUT-VOST-R1-TP4F | 113           | 109           | 118           |       | 0          |
| 06 | AFTOUT-VOST-R1-TP5F | 115           | 111           | 133           |       | 0          |
| 07 | AFTOUT-VOST-BT-TP1F | 102           | 97            | 114           |       | 0          |
| 08 | VLKRV               | 115           | 122           | 120           |       | 0          |
| 09 | VLKRVBS             | 96            | 111           | 93            |       | 0          |
| 10 | AFTOUT-VOST-BT-TP1B | 100           | 125           | 112           |       | 0          |
| 11 | AFTOUT-VOST-R1-TP6B | 130           | 137           | 219*          |       | 1          |
| 12 | AFTOUT-VOST-R1-TP5B | 112           | 118           | 189*          |       | 1          |
| 13 | AFTOUT-VOST-R1-TP4B | 109           | 106           | 171*          |       | 1          |
| 14 | AFTOUT-VOST-R1-TP3B | 99            | 96            | 130           |       | 0          |
| 15 | VLKRU               | 98            | 127           | 101           |       | 0          |
| 16 | AFTOUT-VOST-R1-TP2B | 93            | 87            | 113           |       | 0          |
| 17 | AFTOUT-VOST-R1-TP1B | 84            | 79            | 117           |       | 0          |
| 18 |                     |               |               |               |       |            |
| 19 |                     |               |               |               |       |            |
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| 30 |                     |               |               |               |       |            |

QC LIMITS

S1 (DCE) = 1,2-Dichloroethane-d4 (50-150)  
 S2 (TOL) = Toluene-d8 (50-150)  
 S3 (BFB) = Bromofluorobenzene (50-150)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

D Surrogates diluted out

2A  
WATER VOLATILE SURROGATE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

|    | EPA<br>SAMPLE NO.   | S1<br>(DCE) # | S2<br>(TOL) # | S3<br>(BFB) # | OTHER | TOT<br>OUT |
|----|---------------------|---------------|---------------|---------------|-------|------------|
|    | =====               | =====         | =====         | =====         | ===== | =====      |
| 01 | VBLKRO              | 90            | 99            | 90            |       | 0          |
| 02 | VBLKROMS            | 98            | 98            | 93            |       | 0          |
| 03 | AFTOUT-VOST-R1-COND | 91            | 102           | 95            |       | 0          |
| 04 | OUT-VOST-SB-COND    | 96            | 107           | 100           |       | 0          |
| 05 |                     |               |               |               |       |            |
| 06 |                     |               |               |               |       |            |
| 07 |                     |               |               |               |       |            |
| 08 |                     |               |               |               |       |            |
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| 27 |                     |               |               |               |       |            |
| 28 |                     |               |               |               |       |            |
| 29 |                     |               |               |               |       |            |
| 30 |                     |               |               |               |       |            |

QC LIMITS

S1 (DCE) = 1,2-Dichloroethane-d4 (76-114)  
 S2 (TOL) = Toluene-d8 (88-110)  
 S3 (BFB) = Bromofluorobenzene (86-115)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

D Surrogates diluted out

FORM 3  
AIR VOLATILE BLANK SPIKE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

Matrix Spike - EPA CLP PR Sample No.: VBLKRC

| COMPOUND           | SPIKE<br>ADDED<br>(ng) | BLANK<br>CONCENTRATION<br>(ng) | BS<br>CONCENTRATION<br>(ng) | BS<br>%<br>REC # | QC.<br>LIMITS<br>REC. |
|--------------------|------------------------|--------------------------------|-----------------------------|------------------|-----------------------|
| =====              | =====                  | =====                          | =====                       | =====            | =====                 |
| 1,1-Dichloroethene | 500.00                 | 0.0000                         | 467.02                      | 93               | 59-172                |
| Trichloroethene    | 500.00                 | 0.0000                         | 529.47                      | 106              | 62-137                |
| Benzene            | 500.00                 | 6.051                          | 518.39                      | 102              | 66-142                |
| Toluene            | 500.00                 | 5.406                          | 545.64                      | 108              | 59-139                |
| Chlorobenzene      | 500.00                 | 0.0000                         | 562.25                      | 112              | 60-133                |

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS: \_\_\_\_\_

FORM III VOA

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FORM 3  
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ROY F. WESTON                      Contract: 02281-012-012-1200  
Lab Code:                      Case No.:                      SAS No.:                      SDG No.: 9602L915  
Matrix Spike - EPA CLP PR Sample No.: VBLKRO

| COMPOUND           | SPIKE<br>ADDED<br>(UG/L) | BLANK<br>CONCENTRATION<br>(UG/L) | BS<br>CONCENTRATION<br>(UG/L) | BS<br>%<br>REC # | QC.<br>LIMITS<br>REC. |
|--------------------|--------------------------|----------------------------------|-------------------------------|------------------|-----------------------|
| =====              | =====                    | =====                            | =====                         | =====            | =====                 |
| 1,1-Dichloroethene | 50.000                   | 0.0000                           | 56.757                        | 114              | 61-145                |
| Trichloroethene    | 50.000                   | 0.0000                           | 57.350                        | 115              | 71-120                |
| Benzene            | 50.000                   | 0.0000                           | 56.933                        | 114              | 76-127                |
| Toluene            | 50.000                   | 0.0000                           | 54.030                        | 108              | 76-125                |
| Chlorobenzene      | 50.000                   | 0.0000                           | 52.673                        | 105              | 75-130                |

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS: \_\_\_\_\_

FORM 3  
AIR VOLATILE BLANK SPIKE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

Matrix Spike - EPA CLP PR Sample No.: VBLKRV

| COMPOUND           | SPIKE<br>ADDED<br>(ng) | BLANK<br>CONCENTRATION<br>(ng) | BS<br>CONCENTRATION<br>(ng) | BS<br>%<br>REC # | QC.<br>LIMITS<br>REC. |
|--------------------|------------------------|--------------------------------|-----------------------------|------------------|-----------------------|
| =====              | =====                  | =====                          | =====                       | =====            | =====                 |
| 1,1-Dichloroethene | 500.00                 | 0.0000                         | 542.13                      | 108              | 59-172                |
| Trichloroethene    | 500.00                 | 0.0000                         | 448.31                      | 90               | 62-137                |
| Benzene            | 500.00                 | 8.970                          | 453.79                      | 89               | 66-142                |
| Toluene            | 500.00                 | 0.0000                         | 478.36                      | 96               | 59-139                |
| Chlorobenzene      | 500.00                 | 0.0000                         | 486.63                      | 97               | 60-133                |

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

4A  
VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON Contract: 02281-012-012-1200  
 Lab Code: Case No.: SAS No.: SDG No.: 9602L915  
 Lab File ID: X2709 Lab Sample ID: 96LVX020-MB1  
 Date Analyzed: 02/07/96 Time Analyzed: 1212  
 Matrix: (soil/water) AIR Level: (low/med) \_\_\_\_\_  
 Instrument ID: 5970X

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

|    | EPA<br>SAMPLE NO.  | LAB<br>SAMPLE ID | LAB<br>FILE ID | TIME<br>ANALYZED |
|----|--------------------|------------------|----------------|------------------|
| 01 | VBLKRCMS           | 96LVX020-MB1S    | X2710          | 1259             |
| 02 | AFTOUT-VOST-R1-TP1 | 9602L915-001     | X2712          | 1410             |
| 03 | AFTOUT-VOST-R1-TP3 | 9602L915-005     | X2715          | 1602             |
| 04 | AFTOUT-VOST-R1-TP4 | 9602L915-007     | X2716          | 1636             |
| 05 | AFTOUT-VOST-R1-TP5 | 9602L915-009     | X2717          | 1708             |
| 06 | AFTOUT-VOST-BT-TP1 | 9602L915-013     | X2719          | 1821             |
| 07 |                    |                  |                |                  |
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COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON                      Contract: 02281-012-012-1200  
 Lab Code:                      Case No.:                      SAS No.:                      SDG No.: 9602L915  
 Lab File ID:                      K2905                      Lab Sample ID: 96LVK031-MB1  
 Date Analyzed:                      02/09/96                      Time Analyzed:                      1449  
 Matrix: (soil/water) WATER                      Level: (low/med)                      LOW  
 Instrument ID:                      5970K

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|
| 01 | VBLKROMS            | 96LVK031-MB1S    | K2906          | 1532             |
| 02 | AFTOUT-VOST-R1-COND | 9602L915-015     | K2907          | 1616             |
| 03 | OUT-VOST-SB-COND    | 9602L915-016     | K2908          | 1650             |
| 04 |                     |                  |                |                  |
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COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON                      Contract: 02281-012-012-1200  
 Lab Code:                      Case No.:                      SAS No.:                      SDG No.: 9602L915  
 Lab File ID:                      Q021005                      Lab Sample ID: 96LVQ015-MB1  
 Date Analyzed:                      02/10/96                      Time Analyzed:                      1621  
 Matrix: (soil/water) AIR                      Level: (low/med) \_\_\_\_\_  
 Instrument ID:                      1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

|    | EPA<br>SAMPLE NO.  | LAB<br>SAMPLE ID | LAB<br>FILE ID | TIME<br>ANALYZED |
|----|--------------------|------------------|----------------|------------------|
|    | =====              | =====            | =====          | =====            |
| 01 | AFTOUT-VOST-R1-TP2 | 9602L915-004     | Q021006        | 1725             |
| 02 | AFTOUT-VOST-R1-TP1 | 9602L915-002     | Q021007        | 1815             |
| 03 |                    |                  |                |                  |
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COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

Lab File ID: Q020904

Lab Sample ID: 96LVQ014-MB1

Date Analyzed: 02/09/96

Time Analyzed: 1137

Matrix: (soil/water) AIR

Level: (low/med) \_\_\_\_\_

Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

|    | EPA<br>SAMPLE NO.  | LAB<br>SAMPLE ID | LAB<br>FILE ID | TIME<br>ANALYZED |
|----|--------------------|------------------|----------------|------------------|
| 01 | VBLKRVBS           | 96LVQ014-MB1S    | Q020906        | 1327             |
| 02 | AFTOUT-VOST-BT-TP1 | 9602L915-014     | Q020909        | 1532             |
| 03 | AFTOUT-VOST-R1-TP6 | 9602L915-012     | Q020910        | 1609             |
| 04 | AFTOUT-VOST-R1-TP5 | 9602L915-010     | Q020911        | 1652             |
| 05 | AFTOUT-VOST-R1-TP4 | 9602L915-008     | Q020913        | 1809             |
| 06 | AFTOUT-VOST-R1-TP3 | 9602L915-006     | Q020915        | 1923             |
| 07 |                    |                  |                |                  |
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COMMENTS:

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON Contract: 02281-012-012-1200  
Lab Code: Case No.: SAS No.: SDG No.: 9602L915  
Lab File ID: K2404 BFB Injection Date: 02/04/96  
Instrument ID: 5970K BFB Injection Time: 1107  
Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 19.9                 |
| 75  | 30.0 - 60.0% of mass 95            | 50.9                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 7.5                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 80.0                 |
| 175 | 5.0 - 9.0% of mass 174             | 6.3 ( 7.9)1          |
| 176 | 95.0 - 100.9% of mass 174          | 79.7 ( 99.6)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.8 ( 6.0)2          |

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|-------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD200           | VSTD200          | K2405          | 02/04/96         | 1122             |
| 02 | VSTD100           | VSTD100          | K2406          | 02/04/96         | 1158             |
| 03 | VSTD020           | VSTD020          | K2407          | 02/04/96         | 1233             |
| 04 | VSTD010           | VSTD010          | K2408          | 02/04/96         | 1307             |
| 05 | VSTD050           | VSTD050          | K2409          | 02/04/96         | 1347             |
| 06 |                   |                  |                |                  |                  |
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5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

Lab File ID: K2901

BFB Injection Date: 02/09/96

Instrument ID: 5970K

BFB Injection Time: 1217

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 20.7                 |
| 75  | 30.0 - 60.0% of mass 95            | 50.8                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 7.4                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 86.2                 |
| 175 | 5.0 - 9.0% of mass 174             | 6.7 ( 7.8)1          |
| 176 | 95.0 - 100.9% of mass 174          | 83.5 ( 96.8)1        |
| 177 | 5.0 - 9.0% of mass 176             | 5.4 ( 6.5)2          |

1-Value is % of mass 174      2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD050             | VSTD050          | K2903          | 02/09/96         | 1310             |
| 02 | VBLKRO              | 96LVK031-MB1     | K2905          | 02/09/96         | 1449             |
| 03 | VBLKROMS            | 96LVK031-MB1S    | K2906          | 02/09/96         | 1532             |
| 04 | AFTOUT-VOST-R1-COND | 9602L915-015     | K2907          | 02/09/96         | 1616             |
| 05 | OUT-VOST-SB-COND    | 9602L915-016     | K2908          | 02/09/96         | 1650             |
| 06 |                     |                  |                |                  |                  |
| 07 |                     |                  |                |                  |                  |
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5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

Lab File ID: X2701

BFB Injection Date: 02/07/96

Instrument ID: 5970X

BFB Injection Time: 0713

Matrix: (soil/water) AIR      Level: (low/med)      Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 18.5                 |
| 75  | 30.0 - 60.0% of mass 95            | 46.6                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 8.4                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 72.7                 |
| 175 | 5.0 - 9.0% of mass 174             | 5.0 ( 6.9)1          |
| 176 | 95.0 - 100.9% of mass 174          | 69.8 ( 96.0)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.6 ( 6.7)2          |

1-Value is % of mass 174

2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO.  | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|--------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD100            | VSTD100          | X2702          | 02/07/96         | 0737             |
| 02 | VSTD1000           | VSTD1000         | X2704          | 02/07/96         | 0844             |
| 03 | VSTD2000           | VSTD2000         | X2705          | 02/07/96         | 0915             |
| 04 | VSTD500            | VSTD500          | X2707          | 02/07/96         | 1033             |
| 05 | VBLKRC             | 96LVX020-MB1     | X2709          | 02/07/96         | 1212             |
| 06 | VBLKRCMS           | 96LVX020-MB1S    | X2710          | 02/07/96         | 1259             |
| 07 | AFTOUT-VOST-R1-TP1 | 9602L915-001     | X2712          | 02/07/96         | 1410             |
| 08 | AFTOUT-VOST-R1-TP3 | 9602L915-005     | X2715          | 02/07/96         | 1602             |
| 09 | AFTOUT-VOST-R1-TP4 | 9602L915-007     | X2716          | 02/07/96         | 1636             |
| 10 | AFTOUT-VOST-R1-TP5 | 9602L915-009     | X2717          | 02/07/96         | 1708             |
| 11 | AFTOUT-VOST-BT-TP1 | 9602L915-013     | X2719          | 02/07/96         | 1821             |
| 12 |                    |                  |                |                  |                  |
| 13 |                    |                  |                |                  |                  |
| 14 |                    |                  |                |                  |                  |
| 15 |                    |                  |                |                  |                  |
| 16 |                    |                  |                |                  |                  |
| 17 |                    |                  |                |                  |                  |
| 18 |                    |                  |                |                  |                  |
| 19 |                    |                  |                |                  |                  |
| 20 |                    |                  |                |                  |                  |
| 21 |                    |                  |                |                  |                  |
| 22 |                    |                  |                |                  |                  |

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON Contract: 02281-012-012-1200  
Lab Code: Case No.: SAS No.: SDG No.: 9602L915  
Lab File ID: Q020801 BFB Injection Date: 02/08/96  
Instrument ID: 1050Q BFB Injection Time: 1357  
Matrix: (soil/water) AIR Level: (low/med) Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 15.4                 |
| 75  | 30.0 - 60.0% of mass 95            | 39.0                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 7.6                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 90.7                 |
| 175 | 5.0 - 9.0% of mass 174             | 6.6 ( 7.3)1          |
| 176 | 95.0 - 100.9% of mass 174          | 90.5 ( 99.8)1        |
| 177 | 5.0 - 9.0% of mass 176             | 7.1 ( 7.9)2          |

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|-------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD500           | VSTD500          | Q020803        | 02/08/96         | 1518             |
| 02 | VSTD1000          | VSTD1000         | Q020804        | 02/08/96         | 1600             |
| 03 | VSTD2000          | VSTD2000         | Q020805        | 02/08/96         | 1636             |
| 04 | VSTD100           | VSTD100          | Q020807        | 02/08/96         | 1749             |
| 05 |                   |                  |                |                  |                  |
| 06 |                   |                  |                |                  |                  |
| 07 |                   |                  |                |                  |                  |
| 08 |                   |                  |                |                  |                  |
| 09 |                   |                  |                |                  |                  |
| 10 |                   |                  |                |                  |                  |
| 11 |                   |                  |                |                  |                  |
| 12 |                   |                  |                |                  |                  |
| 13 |                   |                  |                |                  |                  |
| 14 |                   |                  |                |                  |                  |
| 15 |                   |                  |                |                  |                  |
| 16 |                   |                  |                |                  |                  |
| 17 |                   |                  |                |                  |                  |
| 18 |                   |                  |                |                  |                  |
| 19 |                   |                  |                |                  |                  |
| 20 |                   |                  |                |                  |                  |
| 21 |                   |                  |                |                  |                  |
| 22 |                   |                  |                |                  |                  |

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON Contract: 02281-012-012-1200  
Lab Code: Case No.: SAS No.: SDG No.: 9602L915  
Lab File ID: Q020901 BFB Injection Date: 02/09/96  
Instrument ID: 1050Q BFB Injection Time: 0926  
Matrix: (soil/water) AIR Level: (low/med) Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 22.9                 |
| 75  | 30.0 - 60.0% of mass 95            | 46.4                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 6.4                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 55.9                 |
| 175 | 5.0 - 9.0% of mass 174             | 4.3 ( 7.7)1          |
| 176 | 95.0 - 100.9% of mass 174          | 56.4 (100.9)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.2 ( 7.5)2          |

1-Value is % of mass 174

2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO.  | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|--------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD500            | VSTD500          | Q020902        | 02/09/96         | 1008             |
| 02 | VBLKRV             | 96LVQ014-MB1     | Q020904        | 02/09/96         | 1137             |
| 03 | VBLKRVBS           | 96LVQ014-MB1S    | Q020906        | 02/09/96         | 1327             |
| 04 | AFTOUT-VOST-BT-TP1 | 9602L915-014     | Q020909        | 02/09/96         | 1532             |
| 05 | AFTOUT-VOST-R1-TP6 | 9602L915-012     | Q020910        | 02/09/96         | 1609             |
| 06 | AFTOUT-VOST-R1-TP5 | 9602L915-010     | Q020911        | 02/09/96         | 1652             |
| 07 | AFTOUT-VOST-R1-TP4 | 9602L915-008     | Q020913        | 02/09/96         | 1809             |
| 08 | AFTOUT-VOST-R1-TP3 | 9602L915-006     | Q020915        | 02/09/96         | 1923             |
| 09 |                    |                  |                |                  |                  |
| 10 |                    |                  |                |                  |                  |
| 11 |                    |                  |                |                  |                  |
| 12 |                    |                  |                |                  |                  |
| 13 |                    |                  |                |                  |                  |
| 14 |                    |                  |                |                  |                  |
| 15 |                    |                  |                |                  |                  |
| 16 |                    |                  |                |                  |                  |
| 17 |                    |                  |                |                  |                  |
| 18 |                    |                  |                |                  |                  |
| 19 |                    |                  |                |                  |                  |
| 20 |                    |                  |                |                  |                  |
| 21 |                    |                  |                |                  |                  |
| 22 |                    |                  |                |                  |                  |

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON Contract: 02281-012-012-1200  
Lab Code: Case No.: SAS No.: SDG No.: 9602L915  
Lab File ID: Q021001 BFB Injection Date: 02/10/96  
Instrument ID: 1050Q BFB Injection Time: 1225  
Matrix: (soil/water) AIR Level: (low/med) Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 22.3                 |
| 75  | 30.0 - 60.0% of mass 95            | 46.4                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 6.7                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 57.3                 |
| 175 | 5.0 - 9.0% of mass 174             | 3.9 ( 6.7)1          |
| 176 | 95.0 - 100.9% of mass 174          | 57.7 (100.6)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.0 ( 7.0)2          |

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO.  | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|--------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD500            | VSTD500          | Q021003        | 02/10/96         | 1440             |
| 02 | VBLKRU             | 96LVQ015-MB1     | Q021005        | 02/10/96         | 1621             |
| 03 | AFTOUT-VOST-R1-TP2 | 9602L915-004     | Q021006        | 02/10/96         | 1725             |
| 04 | AFTOUT-VOST-R1-TP1 | 9602L915-002     | Q021007        | 02/10/96         | 1815             |
| 05 |                    |                  |                |                  |                  |
| 06 |                    |                  |                |                  |                  |
| 07 |                    |                  |                |                  |                  |
| 08 |                    |                  |                |                  |                  |
| 09 |                    |                  |                |                  |                  |
| 10 |                    |                  |                |                  |                  |
| 11 |                    |                  |                |                  |                  |
| 12 |                    |                  |                |                  |                  |
| 13 |                    |                  |                |                  |                  |
| 14 |                    |                  |                |                  |                  |
| 15 |                    |                  |                |                  |                  |
| 16 |                    |                  |                |                  |                  |
| 17 |                    |                  |                |                  |                  |
| 18 |                    |                  |                |                  |                  |
| 19 |                    |                  |                |                  |                  |
| 20 |                    |                  |                |                  |                  |
| 21 |                    |                  |                |                  |                  |
| 22 |                    |                  |                |                  |                  |

8A  
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON                      Contract: 02281-012-012-1200  
 Lab Code:                      Case No.:                      SAS No.:                      SDG No.: 9602L915  
 Lab File ID (Standard): K2903                      Date Analyzed: 02/09/96  
 Instrument ID: 5970K                      Time Analyzed: 1310  
 Matrix: (soil/water) WATER    Level: (low/med) LOW    Column: (pack/cap) CAP

|                        | IS1 (BCM)<br>AREA # | RT    | IS2 (DFB)<br>AREA # | RT    | IS3 (CBZ)<br>AREA # | RT    |
|------------------------|---------------------|-------|---------------------|-------|---------------------|-------|
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 12 HOUR STD            | 33265               | 7.37  | 117090              | 10.04 | 95025               | 16.73 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| UPPER LIMIT            | 66530               | 7.87  | 234180              | 10.54 | 190050              | 17.23 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| LOWER LIMIT            | 16632               | 6.87  | 58545               | 9.54  | 47512               | 16.23 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| EPA SAMPLE<br>NO.      |                     |       |                     |       |                     |       |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 01 VBLKRO              | 31488               | 7.40  | 111067              | 10.06 | 90926               | 16.77 |
| 02 VBLKROMS            | 28385               | 7.41  | 97920               | 10.08 | 82571               | 16.79 |
| 03 AFTOUT-VOST-R1-COND | 25524               | 7.44  | 95998               | 10.08 | 76679               | 16.79 |
| 04 OUT-VOST-SB-COND    | 23370               | 7.41  | 87850               | 10.08 | 70644               | 16.79 |
| 05                     |                     |       |                     |       |                     |       |
| 06                     |                     |       |                     |       |                     |       |
| 07                     |                     |       |                     |       |                     |       |
| 08                     |                     |       |                     |       |                     |       |
| 09                     |                     |       |                     |       |                     |       |
| 10                     |                     |       |                     |       |                     |       |
| 11                     |                     |       |                     |       |                     |       |
| 12                     |                     |       |                     |       |                     |       |
| 13                     |                     |       |                     |       |                     |       |
| 14                     |                     |       |                     |       |                     |       |
| 15                     |                     |       |                     |       |                     |       |
| 16                     |                     |       |                     |       |                     |       |
| 17                     |                     |       |                     |       |                     |       |
| 18                     |                     |       |                     |       |                     |       |
| 19                     |                     |       |                     |       |                     |       |
| 20                     |                     |       |                     |       |                     |       |
| 21                     |                     |       |                     |       |                     |       |
| 22                     |                     |       |                     |       |                     |       |

IS1 (BCM) = Bromochloromethane  
 IS2 (DFB) = 1,4-Difluorobenzene  
 IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk.

8A  
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON Contract: 02281-012-012-1200  
 Lab Code: Case No.: SAS No.: SDG No.: 9602L915  
 Lab File ID (Standard): X2707 Date Analyzed: 02/07/96  
 Instrument ID: 5970X Time Analyzed: 1033  
 Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

|                        | IS1 (BCM)<br>AREA # | RT    | IS2 (DFB)<br>AREA # | RT    | IS3 (CBZ)<br>AREA # | RT    |
|------------------------|---------------------|-------|---------------------|-------|---------------------|-------|
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 12 HOUR STD            | 50907               | 6.49  | 229903              | 9.71  | 158570              | 16.73 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| UPPER LIMIT            | 101814              | 6.99  | 459806              | 10.21 | 317140              | 17.23 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| LOWER LIMIT            | 25454               | 5.99  | 114952              | 9.21  | 79285               | 16.23 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| EPA SAMPLE<br>NO.      |                     |       |                     |       |                     |       |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 01 VBLKRC              | 49633               | 6.49  | 224705              | 9.71  | 159497              | 16.74 |
| 02 VBLKRCMS            | 54578               | 6.52  | 242276              | 9.72  | 164922              | 16.76 |
| 03 AFTOUT-VOST-R1-TP1F | 51148               | 6.51  | 226549              | 9.71  | 169568              | 16.74 |
| 04 AFTOUT-VOST-R1-TP3F | 47541               | 6.51  | 227198              | 9.73  | 170033              | 16.74 |
| 05 AFTOUT-VOST-R1-TP4F | 44020               | 6.54  | 207511              | 9.73  | 157007              | 16.74 |
| 06 AFTOUT-VOST-R1-TP5F | 47590               | 6.53  | 220497              | 9.73  | 163059              | 16.74 |
| 07 AFTOUT-VOST-BT-TP1F | 46484               | 6.51  | 212311              | 9.71  | 156428              | 16.74 |
| 08                     |                     |       |                     |       |                     |       |
| 09                     |                     |       |                     |       |                     |       |
| 10                     |                     |       |                     |       |                     |       |
| 11                     |                     |       |                     |       |                     |       |
| 12                     |                     |       |                     |       |                     |       |
| 13                     |                     |       |                     |       |                     |       |
| 14                     |                     |       |                     |       |                     |       |
| 15                     |                     |       |                     |       |                     |       |
| 16                     |                     |       |                     |       |                     |       |
| 17                     |                     |       |                     |       |                     |       |
| 18                     |                     |       |                     |       |                     |       |
| 19                     |                     |       |                     |       |                     |       |
| 20                     |                     |       |                     |       |                     |       |
| 21                     |                     |       |                     |       |                     |       |
| 22                     |                     |       |                     |       |                     |       |

IS1 (BCM) = Bromochloromethane  
 IS2 (DFB) = 1,4-Difluorobenzene  
 IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk.

8A  
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON Contract: 02281-012-012-1200  
 Lab Code: Case No.: SAS No.: SDG No.: 9602L915  
 Lab File ID (Standard): Q020902 Date Analyzed: 02/09/96  
 Instrument ID: 1050Q Time Analyzed: 1008  
 Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

|                        | IS1 (BCM)<br>AREA # | RT    | IS2 (DFB)<br>AREA # | RT    | IS3 (CBZ)<br>AREA # | RT    |
|------------------------|---------------------|-------|---------------------|-------|---------------------|-------|
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 12 HOUR STD            | 59254               | 13.40 | 403179              | 15.13 | 416696              | 19.37 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| UPPER LIMIT            | 118508              | 13.90 | 806358              | 15.63 | 833392              | 19.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| LOWER LIMIT            | 29627               | 12.90 | 201590              | 14.63 | 208348              | 18.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| EPA SAMPLE<br>NO.      |                     |       |                     |       |                     |       |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 01 VBLKRV              | 56720               | 13.40 | 368186              | 15.15 | 350052              | 19.37 |
| 02 VBLKRVBS            | 63170               | 13.40 | 446666              | 15.13 | 400407              | 19.35 |
| 03 AFTOUT-VOST-BT-TP1B | 46159               | 13.42 | 294822              | 15.15 | 243815              | 19.37 |
| 04 AFTOUT-VOST-R1-TP6B | 51443               | 13.40 | 302502              | 15.13 | 290415              | 19.35 |
| 05 AFTOUT-VOST-R1-TP5B | 57259               | 13.42 | 352087              | 15.15 | 363685              | 19.37 |
| 06 AFTOUT-VOST-R1-TP4B | 73571               | 13.40 | 426203              | 15.15 | 427238              | 19.37 |
| 07 AFTOUT-VOST-R1-TP3B | 61240               | 13.40 | 367892              | 15.15 | 377200              | 19.37 |
| 08                     |                     |       |                     |       |                     |       |
| 09                     |                     |       |                     |       |                     |       |
| 10                     |                     |       |                     |       |                     |       |
| 11                     |                     |       |                     |       |                     |       |
| 12                     |                     |       |                     |       |                     |       |
| 13                     |                     |       |                     |       |                     |       |
| 14                     |                     |       |                     |       |                     |       |
| 15                     |                     |       |                     |       |                     |       |
| 16                     |                     |       |                     |       |                     |       |
| 17                     |                     |       |                     |       |                     |       |
| 18                     |                     |       |                     |       |                     |       |
| 19                     |                     |       |                     |       |                     |       |
| 20                     |                     |       |                     |       |                     |       |
| 21                     |                     |       |                     |       |                     |       |
| 22                     |                     |       |                     |       |                     |       |

IS1 (BCM) = Bromochloromethane  
 IS2 (DFB) = 1,4-Difluorobenzene  
 IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk.

8A  
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

Lab File ID (Standard): Q021003

Date Analyzed: 02/10/96

Instrument ID: 1050Q

Time Analyzed: 1440

Matrix: (soil/water) AIR

Level: (low/med) LOW

Column: (pack/cap) CAP

|                        | IS1 (BCM)<br>AREA # | RT    | IS2 (DFB)<br>AREA # | RT    | IS3 (CBZ)<br>AREA # | RT    |
|------------------------|---------------------|-------|---------------------|-------|---------------------|-------|
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 12 HOUR STD            | 64073               | 13.40 | 388304              | 15.15 | 408945              | 19.37 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| UPPER LIMIT            | 128146              | 13.90 | 776608              | 15.65 | 817890              | 19.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| LOWER LIMIT            | 32036               | 12.90 | 194152              | 14.65 | 204472              | 18.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| EPA SAMPLE<br>NO.      |                     |       |                     |       |                     |       |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 01 VBLKRU              | 54534               | 13.40 | 329131              | 15.13 | 280207              | 19.35 |
| 02 AFTOUT-VOST-R1-TP2B | 73067               | 13.40 | 390192              | 15.13 | 410245              | 19.35 |
| 03 AFTOUT-VOST-R1-TP1B | 75545               | 13.42 | 431539              | 15.15 | 469286              | 19.37 |
| 04                     |                     |       |                     |       |                     |       |
| 05                     |                     |       |                     |       |                     |       |
| 06                     |                     |       |                     |       |                     |       |
| 07                     |                     |       |                     |       |                     |       |
| 08                     |                     |       |                     |       |                     |       |
| 09                     |                     |       |                     |       |                     |       |
| 10                     |                     |       |                     |       |                     |       |
| 11                     |                     |       |                     |       |                     |       |
| 12                     |                     |       |                     |       |                     |       |
| 13                     |                     |       |                     |       |                     |       |
| 14                     |                     |       |                     |       |                     |       |
| 15                     |                     |       |                     |       |                     |       |
| 16                     |                     |       |                     |       |                     |       |
| 17                     |                     |       |                     |       |                     |       |
| 18                     |                     |       |                     |       |                     |       |
| 19                     |                     |       |                     |       |                     |       |
| 20                     |                     |       |                     |       |                     |       |
| 21                     |                     |       |                     |       |                     |       |
| 22                     |                     |       |                     |       |                     |       |

IS1 (BCM) = Bromochloromethane  
IS2 (DFB) = 1,4-Difluorobenzene  
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk.



## SAMPLE PREP RECORD

Sheet no.: 1

Extract. Date: 02/07/96

Extraction Batch No: 96LVX020

Analyst: JS

Method: N/A

Test: OVOS

Cleanup Date:

Analyst:

Client: COE-HOT GAS

LIMS Report Date: 02/20/96

Solvent:

Adsorbent:

| Sample No:      | Client Name         | Client ID | pH | Initial | Surr. | Spike | Final | Final | Split | GPC | %      | C/D    |
|-----------------|---------------------|-----------|----|---------|-------|-------|-------|-------|-------|-----|--------|--------|
|                 |                     |           |    | WT/VOL  | Mult. | Mult. | VOL   | VOL   | Mult. | Y/N | Solids | FACTOR |
| 9602L915-       | COE-HOT GAS         |           |    |         |       |       |       |       |       |     |        |        |
| 001 T           | AFTOUT-VOST-R1-TP1F |           |    | 1.0     |       |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 005 T           | AFTOUT-VOST-R1-TP3F |           |    | 1.0     |       |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 007 T           | AFTOUT-VOST-R1-TP4F |           |    | 1.0     |       |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 009 T           | AFTOUT-VOST-R1-TP5F |           |    | 1.0     |       |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 013 T           | AFTOUT-VOST-BT-TP1F |           |    | 1.0     |       |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 96LVX020-MB1 T  | VBLKRC              |           |    | 1.0     |       |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 96LVX020-MB1 TS | VBLKRC              |           |    | 1.0     |       | 1.0   | 1     |       | 1.0   | N   | 0.00   | 1.0    |

Comments:

Surrogate:

Spike:

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |

## SAMPLE PREP RECORD

Sheet no.: 1

Extract. Date: 02/10/96

Extraction Batch No: 96LVQ015

Analyst: VR

Method: N/A

Test: OVOS

Cleanup Date:

Analyst:

Client: COE-HOT GAS

LIMS Report Date: 02/20/96

Solvent:

Adsorbent:

| Sample No:   | Client Name         | Client ID | pH     | Initial Surr. | Spike | Final | Final | Split | GPC | %      | C/D    |
|--------------|---------------------|-----------|--------|---------------|-------|-------|-------|-------|-----|--------|--------|
|              |                     |           | WT/VOL | Mult.         | Mult. | VOL   | VOL   | Mult. | Y/N | Solids | FACTOR |
| 9602L915-    | COE-HOT GAS         |           |        |               |       |       |       |       |     |        |        |
| 002 T        | AFTOUT-VOST-R1-TP1B |           | 1.0    |               |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 004 T        | AFTOUT-VOST-R1-TP2B |           | 1.0    |               |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 9602L953-    | COE-HOT GAS         |           |        |               |       |       |       |       |     |        |        |
| 002 T        | AFTOUT-VOST-R2-TP1B |           | 1.0    |               |       | 1     |       | 1.0   | N   |        | 1.0    |
| 004 T        | AFTOUT-VOST-R2-TP2B |           | 1.0    |               |       | 1     |       | 1.0   | N   |        | 1.0    |
| 006 T        | AFTOUT-VOST-R2-TP3B |           | 1.0    |               |       | 1     |       | 1.0   | N   |        | 1.0    |
| 008 T        | AFTOUT-VOST-R2-TP4B |           | 1.0    |               |       | 1     |       | 1.0   | N   |        | 1.0    |
| 96LVQ015-MB1 | T                   |           | 1.0    |               |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
|              | VBLKRU              |           |        |               |       |       |       |       |     |        |        |

Comments:

Surrogate:

Spike:

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |

SAMPLE PREP RECORD

Sheet no.: 1

Extract. Date: 02/09/96 Extraction Batch No: 96LVQ014 Analyst: VR Method: N/A

Test: OVOS

Cleanup Date:

Analyst:

Client: COE-HOT GAS

LIMS Report Date: 02/20/96

Solvent:

Adsorbent:

| Sample No:      | Client Name         | Client ID | pH | Initial | Surr. | Spike | Final | Split | GPC | %      | C/D    |
|-----------------|---------------------|-----------|----|---------|-------|-------|-------|-------|-----|--------|--------|
|                 |                     |           |    | WT/VOL  | Mult. | Mult. | VOL   | Mult. | Y/N | Solids | FACTOR |
| 9602L915-       | COE-HOT GAS         |           |    |         |       |       |       |       |     |        |        |
| 006 T           | AFTOUT-VOST-R1-TP3B |           |    | 1.0     |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 008 T           | AFTOUT-VOST-R1-TP4B |           |    | 1.0     |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 010 T           | AFTOUT-VOST-R1-TP5B |           |    | 1.0     |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 012 T           | AFTOUT-VOST-R1-TP6B |           |    | 1.0     |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 014 T           | AFTOUT-VOST-BT-TP1B |           |    | 1.0     |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 96LVQ014-MB1 T  | VBLKRV              |           |    | 1.0     |       | 1     |       | 1.0   | N   | 0.00   | 1.0    |
| 96LVQ014-MB1 TS | VBLKRV              |           |    | 1.0     | 1.0   | 1     |       | 1.0   | N   | 0.00   | 1.0    |

Comments:

Surrogate:

Spike:

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |

## SAMPLE PREP RECORD

Sheet no.: 1

Extract. Date: 02/09/96      Extraction Batch No: 96LVK031      Analyst: PS      Method: N/A  
Test: OVOS      Cleanup Date:      Analyst:      Client: COE-HOT GAS

LIMS Report Date: 02/20/96

Adsorbent:

Solvent:

| Sample No:      | Client Name<br>Client ID | pH | Initial Surr.<br>WT/VOL | Surr.<br>Mult. | Spike Final<br>Mult. | Final<br>VOL | Split<br>Mult. | GPC<br>Y/N | % Solids | C/D<br>FACTOR |
|-----------------|--------------------------|----|-------------------------|----------------|----------------------|--------------|----------------|------------|----------|---------------|
| 9602L915-       | COE-HOT GAS              |    |                         |                |                      |              |                |            |          |               |
| 015 T           | AFTOUT-VOST-R1-COND      | 2  | 5                       | 1.0            | 5                    |              | 1.0            | N          | 0.0      | 1.0           |
| 016 T           | OUT-VOST-SB-COND         | 2  | 5                       | 1.0            | 5                    |              | 1.0            | N          | 0.0      | 1.0           |
| 9602L953-       | COE-HOT GAS              |    |                         |                |                      |              |                |            |          |               |
| 013 T           | AFTOUT-VOST-R2-COND      | 7  | 5                       | 1.0            | 5                    |              | 1.0            | N          | 0.0      | 1.0           |
| 028 T           | AFTOUT-VOST-R3-COND      | 7  | 5                       | 1.0            | 5                    |              | 1.0            | N          | 0.0      | 1.0           |
| 96LVK031-MB1 T  | VBLKRO                   | 7  | 5                       | 1.0            | 5                    |              | 1.0            | N          | 0.0      | 1.0           |
| 96LVK031-MB1 TS | VBLKRO                   | 7  | 5                       | 1.0            | 5                    | 1.0          | 1.0            | N          | 0.0      | 1.0           |

Comments:  
Surrogate:  
Spike:

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|-----------------|-----------|-------------|-----------|---------------------|
|                      |                 |           |             |           |                     |
|                      |                 |           |             |           |                     |

**END OF DATA PACKAGE**

Roy F. Weston, Inc. - Lionville Laboratory  
VOST ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L953

| CLIENT ID           | RFW # | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|-------|-----|----------|------------|-----------|----------|
| AFTOUT-VOST-R2-TP1F | 001   | AI  | 96LVQ018 | 02/02/96   | N/A       | 02/12/96 |
| AFTOUT-VOST-R2-TP1B | 002   | AI  | 96LVQ015 | 02/02/96   | N/A       | 02/10/96 |
| AFTOUT-VOST-R2-TP2F | 003   | AI  | 96LVQ018 | 02/02/96   | N/A       | 02/12/96 |
| AFTOUT-VOST-R2-TP2B | 004   | AI  | 96LVQ015 | 02/02/96   | N/A       | 02/10/96 |
| AFTOUT-VOST-R2-TP3F | 005   | AI  | 96LVQ018 | 02/02/96   | N/A       | 02/12/96 |
| AFTOUT-VOST-R2-TP3B | 006   | AI  | 96LVQ015 | 02/02/96   | N/A       | 02/10/96 |
| AFTOUT-VOST-R2-TP4F | 007   | AI  | 96LVQ018 | 02/02/96   | N/A       | 02/12/96 |
| AFTOUT-VOST-R2-TP4B | 008   | AI  | 96LVQ015 | 02/02/96   | N/A       | 02/10/96 |
| AFTOUT-VOST-R2-TP5F | 009   | AI  | 96LVQ018 | 02/02/96   | N/A       | 02/13/96 |
| AFTOUT-VOST-R2-TP5B | 010   | AI  | 96LVQ017 | 02/02/96   | N/A       | 02/11/96 |
| AFTOUT-VOST-R2-TP6F | 011   | AI  | 96LVQ018 | 02/02/96   | N/A       | 02/13/96 |
| AFTOUT-VOST-R2-TP6B | 012   | AI  | 96LVQ017 | 02/02/96   | N/A       | 02/11/96 |
| AFTOUT-VOST-R2-COND | 013   | W   | 96LVK031 | 02/02/96   | N/A       | 02/09/96 |
| AFTOUT-VOST-SB-TP1F | 014   | AI  | 96LVQ018 | 02/02/96   | N/A       | 02/13/96 |
| AFTOUT-VOST-SB-TP1B | 015   | AI  | 96LVQ017 | 02/02/96   | N/A       | 02/11/96 |
| AFTOUT-VOST-R3-TP1F | 016   | AI  | 96LVQ018 | 02/04/96   | N/A       | 02/13/96 |
| AFTOUT-VOST-R3-TP1B | 017   | AI  | 96LVQ017 | 02/04/96   | N/A       | 02/11/96 |
| AFTOUT-VOST-R3-TP2F | 018   | AI  | 96LVQ019 | 02/04/96   | N/A       | 02/13/96 |
| AFTOUT-VOST-R3-TP2B | 019   | AI  | 96LVQ017 | 02/04/96   | N/A       | 02/11/96 |
| AFTOUT-VOST-R3-TP3F | 020   | AI  | 96LVQ019 | 02/04/96   | N/A       | 02/13/96 |
| AFTOUT-VOST-R3-TP3B | 021   | AI  | 96LVQ017 | 02/04/96   | N/A       | 02/11/96 |
| AFTOUT-VOST-R3-TP4F | 022   | AI  | 96LVQ019 | 02/04/96   | N/A       | 02/13/96 |
| AFTOUT-VOST-R3-TP4B | 023   | AI  | 96LVQ017 | 02/04/96   | N/A       | 02/11/96 |
| AFTOUT-VOST-R3-TP5F | 024   | AI  | 96LVQ019 | 02/04/96   | N/A       | 02/13/96 |
| AFTOUT-VOST-R3-TP5B | 025   | AI  | 96LVQ017 | 02/04/96   | N/A       | 02/11/96 |
| AFTOUT-VOST-R3-TP6F | 026   | AI  | 96LVQ019 | 02/04/96   | N/A       | 02/13/96 |
| AFTOUT-VOST-R3-TP6B | 027   | AI  | 96LVQ017 | 02/04/96   | N/A       | 02/12/96 |
| AFTOUT-VOST-R3-COND | 028   | W   | 96LVK031 | 02/04/96   | N/A       | 02/09/96 |

LAB QC:

|        |        |    |          |     |     |          |
|--------|--------|----|----------|-----|-----|----------|
| VBLKRY | MB1    | AI | 96LVQ018 | N/A | N/A | 02/12/96 |
| VBLKRU | MB1    | AI | 96LVQ015 | N/A | N/A | 02/10/96 |
| VBLKRX | MB1    | AI | 96LVQ017 | N/A | N/A | 02/11/96 |
| VBLKRO | MB1    | W  | 96LVK031 | N/A | N/A | 02/09/96 |
| VBLKRO | MB1 BS | W  | 96LVK031 | N/A | N/A | 02/09/96 |
| VBLKSE | MB1    | AI | 96LVQ019 | N/A | N/A | 02/13/96 |

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| 2. Tentatively Identified Compounds (TICs) (Form 1E)         |         |
| 3. Raw Data                                                  |         |
| a. Reconstructed Ion Chromatogram(s)                         |         |
| b. Quantitation Report(s)                                    |         |
| c. HSL Mass Spectra                                          |         |
| d. GC/MS Library Search for TIC                              |         |
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| 1. Tabulated Results (Form 1)                                |         |
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**CHAIN OF CUSTODY**



Ex 02 C 953

# Custody Transfer Record/Lab Work Request

WESTON.

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[illegible]

RFW 21-21-001/A-7/91

1372

L373

1375

1377

1378

Belm 2/2

2-18

381.5063



**DATA SUMMARY**

Roy F. Weston, Inc. - Onville Laboratory

Report Date: 02/20/96 16:01  
 VOST TUBE BY GC/MS  
 Work Order: 02281012012 Page: 1a

RFW Batch Number: 9602L953

Client: COE-HOT GAS

Cust ID: AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST-

Sample Information  
 RFW#: 001  
 Matrix: AIR  
 D.F.: 1.00  
 Units: total ng

|                            | R2-TP1F  | AFTOUT-VOST- | R2-TP1B  | AFTOUT-VOST- | R2-TP2F  | AFTOUT-VOST- | R2-TP2B  | AFTOUT-VOST- | R2-TP3F  | AFTOUT-VOST- | R2-TP3B  |
|----------------------------|----------|--------------|----------|--------------|----------|--------------|----------|--------------|----------|--------------|----------|
|                            | 001      |              | 002      |              | 003      |              | 004      |              | 005      |              | 006      |
|                            | AIR      |              | AIR      |              | AIR      |              | AIR      |              | AIR      |              | AIR      |
|                            | 1.00     |              | 1.00     |              | 1.00     |              | 1.00     |              | 1.00     |              | 1.00     |
|                            | total ng |              | total ng |              | total ng |              | total ng |              | total ng |              | total ng |
| Toluene-d8                 | 90       |              | 92       |              | 106      |              | 84       |              | 88       |              | 90       |
| Surrogate                  | 124      |              | 99       |              | 113      |              | 113      |              | 102      |              | 114      |
| Recovery                   | 93       |              | 93       |              | 65       |              | 78       |              | 70       |              | 92       |
| Chloromethane              | 50       | U            | 260      |              | 50       | U            | 2000     | E            | 50       | U            | 760      |
| Bromomethane               | 50       | U            | 68       |              | 50       | U            | 180      |              | 50       | U            | 93       |
| Vinyl Chloride             | 50       | U            | 50       | U            | 50       | U            | 50       | U            | 50       | U            | 50       |
| Chloroethane               | 50       | U            | 50       | U            | 50       | U            | 50       | U            | 50       | U            | 50       |
| Methylene Chloride         | 25       | B            | 14       | JB           | 47       | B            | 16       | JB           | 32       | B            | 49       |
| Acetone                    | 1800     |              | 1500     |              | 7300     |              | 1800     |              | 2200     |              | 240      |
| Carbon Disulfide           | 8        | J            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| 1,1-Dichloroethene         | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| 1,1-Dichloroethane         | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| 1,2-Dichloroethene (trans) | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| Chloroform                 | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| 1,2-Dichloroethane         | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| 2-Butanone                 | 500      | U            | 500      | U            | 500      | U            | 500      | U            | 500      | U            | 500      |
| 1,1,1-Trichloroethane      | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| Carbon Tetrachloride       | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| Vinyl Acetate              | 100      | U            | 100      | U            | 100      | U            | 100      | U            | 100      | U            | 100      |
| Bromodichloromethane       | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| 1,2-Dichloropropane        | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| cis-1,3-Dichloropropene    | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| Trichloroethene            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| Dibromochloromethane       | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| 1,1,2-Trichloroethane      | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| Benzene                    | 16       | JB           | 8        | JB           | 12       | JB           | 5        | JB           | 5        | JB           | 5        |
| Trans-1,3-Dichloropropene  | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| Bromoform                  | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| 4-Methyl-2-pentanone       | 500      | U            | 500      | U            | 500      | U            | 500      | U            | 500      | U            | 500      |
| 2-Hexanone                 | 500      | U            | 500      | U            | 500      | U            | 500      | U            | 500      | U            | 500      |
| Tetrachloroethene          | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |
| 1,1,2,2-Tetrachloroethane  | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       | U            | 25       |

\* = Outside of EPA CLP QC limits.

Cust ID: AFTOUT-VOST- R2-TP1F R2-TP1B R2-TP2F R2-TP2B R2-TP3F R2-TP3B AFTOUT-VOST- R2-TP3B AFTOUT-VOST- R2-TP3B

RFW#:

|                         |     |   |     |   |     |   |     |   |     |   |     |   |
|-------------------------|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|
| Toluene                 | 10  | J | 25  | U | 12  | J | 25  | U | 5   | J | 25  | U |
| Chlorobenzene           | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U |
| Ethylbenzene            | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U |
| Styrene                 | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U |
| Xylene (total)          | 6   | J | 25  | U | 5   | J | 25  | U | 25  | U | 25  | U |
| 2-chloroethylvinylether | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U |

\* = Outside of EPA CLP QC limits.

# Roy F. Weston, Inc. - Bronville Laboratory

Report Date: 02/20/96 16:01

VOST TUBE BY GC/MS

Work Order: 02281012012 Page: 2a

RFW Batch Number: 9602L953

Client: COE-HOT GAS

Cust ID: AFTOUT-VOST- R2-TP4F AFTOUT-VOST- R2-TP4B AFTOUT-VOST- R2-TP5B AFTOUT-VOST- R2-TP6F AFTOUT-VOST- R2-TP6B

Sample Information  
 RFW#: 007  
 Matrix: AIR  
 D.F.: 1.00  
 Units: total ng

| Sample Information         | R2-TP4F | AFTOUT-VOST- R2-TP4B | AFTOUT-VOST- R2-TP5B | AFTOUT-VOST- R2-TP6F | AFTOUT-VOST- R2-TP6B |
|----------------------------|---------|----------------------|----------------------|----------------------|----------------------|
| Toluene-d8                 | 99      | 85                   | 97                   | 106                  | 102                  |
| Surrogate                  | 133     | 125                  | 130                  | 129                  | 113                  |
| Recovery                   | 95      | 90                   | 82                   | 105                  | 68                   |
| Chloromethane              | 50      | 390                  | 50                   | 360                  | 50                   |
| Bromomethane               | 50      | 85                   | 50                   | 73                   | 50                   |
| Vinyl Chloride             | 50      | 50                   | 50                   | 50                   | 50                   |
| Chloroethane               | 50      | 50                   | 50                   | 50                   | 50                   |
| Methylene Chloride         | 23      | 54                   | 21                   | 29                   | 33                   |
| Acetone                    | 3000    | 370                  | 3100                 | 500                  | 3300                 |
| Carbon Disulfide           | 7       | 25                   | 9                    | 25                   | 10                   |
| 1,1-Dichloroethene         | 25      | 25                   | 25                   | 25                   | 25                   |
| 1,1-Dichloroethane         | 25      | 25                   | 25                   | 25                   | 25                   |
| 1,2-Dichloroethene (trans) | 25      | 25                   | 25                   | 25                   | 25                   |
| Chloroform                 | 25      | 25                   | 25                   | 25                   | 25                   |
| 1,2-Dichloroethane         | 25      | 25                   | 25                   | 25                   | 25                   |
| 2-Butanone                 | 500     | 500                  | 500                  | 500                  | 500                  |
| 1,1,1-Trichloroethane      | 25      | 25                   | 25                   | 25                   | 25                   |
| Carbon Tetrachloride       | 25      | 25                   | 25                   | 25                   | 25                   |
| Vinyl Acetate              | 100     | 100                  | 100                  | 100                  | 100                  |
| Bromodichloromethane       | 25      | 25                   | 25                   | 25                   | 25                   |
| 1,2-Dichloropropane        | 25      | 25                   | 25                   | 25                   | 25                   |
| cis-1,3-Dichloropropene    | 25      | 25                   | 25                   | 25                   | 25                   |
| Trichloroethene            | 25      | 25                   | 25                   | 25                   | 25                   |
| Dibromochloromethane       | 25      | 25                   | 25                   | 25                   | 25                   |
| 1,1,2-Trichloroethane      | 25      | 25                   | 25                   | 25                   | 25                   |
| Benzene                    | 24      | 6                    | 9                    | 9                    | 11                   |
| Trans-1,3-Dichloropropene  | 25      | 25                   | 25                   | 25                   | 25                   |
| Bromoform                  | 25      | 25                   | 25                   | 25                   | 25                   |
| 4-Methyl-2-pentanone       | 500     | 500                  | 500                  | 500                  | 500                  |
| 2-Hexanone                 | 500     | 500                  | 500                  | 500                  | 500                  |
| Tetrachloroethene          | 25      | 25                   | 25                   | 25                   | 25                   |
| 1,1,2,2-Tetrachloroethane  | 25      | 25                   | 25                   | 25                   | 25                   |

\*= Outside of EPA CLP QC limits.



# Roy F. Weston, Inc. - Cronville Laboratory

Report Date: 02/20/96 16:01

VOST TUBE BY GC/MS

Work Order: 02281012012 Page: 3a

RFW Batch Number: 9602L953

Client: COE-HOT GAS

Cust ID: AFTOUT-VOST- R2-COND 013 WATER 1.00 ug/L  
 RFW#: 013  
 Matrix: WATER 1.00  
 D.F.: 1.00  
 Units: ug/L

| Sample Information         | RFW#:                 | Matrix: | D.F.: | Units: | AFTOUT-VOST- SB-TP1F 014 | AFTOUT-VOST- SB-TP1F 015 | AFTOUT-VOST- SB-TP1F 016 | AFTOUT-VOST- R3-TP1B 017 | AFTOUT-VOST- R3-TP2F 018 |
|----------------------------|-----------------------|---------|-------|--------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Surrogate                  | 102                   | 98      | 96    | 10     | 102                      | 101                      | 115                      | 94                       | 96                       |
| Recovery                   | 1,2-Dichloroethane-d4 | 96      | 96    | 10     | 124                      | 101                      | 113                      | 137                      | 109                      |
| Chloromethane              | 10 U                  | 50 U    | 50 U  | 50 U   | 83                       | 96                       | 86                       | 106                      | 108                      |
| Bromomethane               | 10 U                  | 50 U    | 50 U  | 50 U   | 1700                     | 500 U                    | 1300                     | 840                      | 620                      |
| Vinyl Chloride             | 10 U                  | 50 U    | 50 U  | 50 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 13 J                     |
| Chloroethane               | 10 U                  | 50 U    | 50 U  | 50 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Methylene Chloride         | 2 JB                  | 29 B    | 44 B  | 43 B   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Acetone                    | 32                    | 1700    | 500 U | 1300   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Carbon Disulfide           | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| 1,1-Dichloroethene         | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| 1,1-Dichloroethane         | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| 1,2-Dichloroethene (trans) | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Chloroform                 | 3 J                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| 1,2-Dichloroethane         | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| 2-Butanone                 | 10 U                  | 500 U   | 500 U | 500 U  | 500 U                    | 500 U                    | 500 U                    | 500 U                    | 500 U                    |
| 1,1,1-Trichloroethane      | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Carbon Tetrachloride       | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Vinyl Acetate              | 10 U                  | 100 U   | 100 U | 100 U  | 100 U                    | 100 U                    | 100 U                    | 100 U                    | 100 U                    |
| Bromodichloromethane       | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| 1,2-Dichloropropane        | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| cis-1,3-Dichloropropene    | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Trichloroethene            | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Dibromochloromethane       | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| 1,1,2-Trichloroethane      | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Benzene                    | 5 U                   | 6 JB    | 25 U  | 18 JB  | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Trans-1,3-Dichloropropene  | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| Bromoform                  | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| 4-Methyl-2-pentanone       | 10 U                  | 500 U   | 500 U | 500 U  | 500 U                    | 500 U                    | 500 U                    | 500 U                    | 500 U                    |
| 2-Hexanone                 | 10 U                  | 500 U   | 500 U | 500 U  | 500 U                    | 500 U                    | 500 U                    | 500 U                    | 500 U                    |
| Tetrachloroethene          | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |
| 1,1,2,2-Tetrachloroethane  | 5 U                   | 25 U    | 25 U  | 25 U   | 25 U                     | 25 U                     | 25 U                     | 25 U                     | 25 U                     |

\*= Outside of EPA CLP QC limits.





# Roy F. Weston, Inc. - Lionville Laboratory

Report Date: 02/20/96 16:01

VOST TUBE BY GC/MS

RFW Batch Number: 9602L953

Client: COG-HOI GAS

Work Order: 02281012012

Page: 4a

Cust ID: AFTOUT-VOST- R3-TP2B AFTOUT-VOST- R3-TP3F AFTOUT-VOST- R3-TP4B AFTOUT-VOST- R3-TP5F

Sample Information  
 RFW#: 019  
 Matrix: AIR  
 D.F.: 1.00  
 Units: total ng

|                                | AFTOUT-VOST- R3-TP2B | AFTOUT-VOST- R3-TP3F | AFTOUT-VOST- R3-TP4B | AFTOUT-VOST- R3-TP5F |      |
|--------------------------------|----------------------|----------------------|----------------------|----------------------|------|
| Toluene-d8                     | 104                  | 95                   | 101                  | 114                  | 84   |
| Surrogate Bromofluorobenzene   | 179 *                | 140                  | 165 *                | 160 *                | 98   |
| Recovery 1,2-Dichloroethane-d4 | 117                  | 124                  | 108                  | 102                  | 80   |
| Chloromethane                  | 370                  | 50                   | 730                  | 50                   | 50   |
| Bromomethane                   | 97                   | 50                   | 78                   | 50                   | 50   |
| Vinyl Chloride                 | 50                   | 50                   | 50                   | 50                   | 50   |
| Chloroethane                   | 50                   | 50                   | 50                   | 50                   | 50   |
| Methylene Chloride             | 22                   | 15                   | 23                   | 13                   | 22   |
| Acetone                        | 1300                 | 560                  | 440                  | 2100                 | 1600 |
| Carbon Disulfide               | 25                   | 7                    | 25                   | 7                    | 25   |
| 1,1-Dichloroethene             | 25                   | 25                   | 25                   | 25                   | 25   |
| 1,1-Dichloroethane             | 25                   | 25                   | 25                   | 25                   | 25   |
| 1,2-Dichloroethene (trans)     | 25                   | 25                   | 25                   | 25                   | 25   |
| Chloroform                     | 25                   | 25                   | 25                   | 25                   | 25   |
| 1,2-Dichloroethane             | 25                   | 25                   | 25                   | 25                   | 25   |
| 2-Butanone                     | 500                  | 500                  | 500                  | 500                  | 500  |
| 1,1,1-Trichloroethane          | 25                   | 25                   | 25                   | 25                   | 25   |
| Carbon Tetrachloride           | 25                   | 25                   | 25                   | 25                   | 25   |
| Vinyl Acetate                  | 100                  | 100                  | 100                  | 100                  | 100  |
| Bromodichloromethane           | 25                   | 25                   | 25                   | 25                   | 25   |
| 1,2-Dichloropropane            | 25                   | 25                   | 25                   | 25                   | 25   |
| cis-1,3-Dichloropropene        | 25                   | 25                   | 25                   | 25                   | 25   |
| Trichloroethene                | 25                   | 25                   | 25                   | 25                   | 25   |
| Dibromochloromethane           | 25                   | 25                   | 25                   | 25                   | 25   |
| 1,1,2-Trichloroethane          | 25                   | 25                   | 25                   | 25                   | 25   |
| Benzene                        | 10                   | 15                   | 8                    | 13                   | 7    |
| Trans-1,3-Dichloropropene      | 25                   | 25                   | 25                   | 25                   | 25   |
| Bromoform                      | 25                   | 25                   | 25                   | 25                   | 25   |
| 4-Methyl-2-pentanone           | 500                  | 500                  | 500                  | 500                  | 500  |
| 2-Hexanone                     | 500                  | 500                  | 500                  | 500                  | 500  |
| Tetrachloroethene              | 25                   | 25                   | 25                   | 25                   | 25   |
| 1,1,2,2-Tetrachloroethane      | 25                   | 25                   | 25                   | 25                   | 25   |

\*= Outside of EPA CLP QC limits.

|                         |     |   |     |   |     |   |     |   |     |   |     |   |
|-------------------------|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|
| Toluene                 | 25  | U | 10  | J | 25  | U | 8   | J | 25  | U | 7   | J |
| Chlorobenzene           | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U |
| Ethylbenzene            | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U |
| Styrene                 | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U | 25  | U |
| Xylene (total)          | 25  | U | 25  | U | 25  | U | 25  | U | 3   | J | 25  | U |
| 2-chloroethylvinylether | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U | 100 | U |

\*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Greenville Laboratory

Report Date: 02/20/96 16:01

Work Order: 02281012012 Page: 5a

RFW Batch Number: 9602L953

Client: COB-HOT GAS

Cust ID: AFTOUT-VOST- R3-TP5B

AFTOUT-VOST- R3-TP6B

AFTOUT-VOST- R3-COND

VBLKRY

VBLKRU

Sample Information  
 RFW#: 025  
 Matrix: AIR  
 D.F.: 1.00  
 Units: total ng

| Surrogate                  | 116    | 111    | 96    | 111    | 100  | 147   | 127   |
|----------------------------|--------|--------|-------|--------|------|-------|-------|
| Recovery                   | 179 *  | 179 *  | 125   | 179 *  | 96   | 113   | 101   |
|                            | 111    | 116    | 92    | 116    | 98   | 106   | 98    |
| Toluene-d8                 | 4600 E | 2500 E | 50 U  | 2500 E | 10 U | 50 U  | 50 U  |
| Bromofluorobenzene         | 260    | 360    | 50 U  | 360    | 10 U | 25 J  | 50 U  |
| 1,2-Dichloroethane-d4      | 50 U   | 50 U   | 50 U  | 50 U   | 10 U | 50 U  | 50 U  |
| Chloromethane              | 50 U   | 50 U   | 50 U  | 50 U   | 10 U | 50 U  | 50 U  |
| Bromomethane               | 52 B   | 31 B   | 22 JB | 31 B   | 6 B  | 19 J  | 57    |
| Vinyl Chloride             | 500 U  | 500 U  | 930   | 500 U  | 88   | 500 U | 500 U |
| Chloroethane               | 25 U   | 25 U   | 6 J   | 25 U   | 5 U  | 25 U  | 25 U  |
| Methylene Chloride         | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| Acetone                    | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| Carbon Disulfide           | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| 1,1-Dichloroethene         | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| 1,1-Dichloroethane         | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| 1,2-Dichloroethene (trans) | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| Chloroform                 | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| 1,2-Dichloroethane         | 500 U  | 500 U  | 500 U | 500 U  | 10 U | 500 U | 500 U |
| 2-Butanone                 | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| 1,1,1-Trichloroethane      | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| Carbon Tetrachloride       | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| Vinyl Acetate              | 100 U  | 100 U  | 100 U | 100 U  | 10 U | 100 U | 100 U |
| Bromodichloromethane       | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| 1,2-Dichloropropane        | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| cis-1,3-Dichloropropene    | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| Trichloroethene            | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| Dibromochloromethane       | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| 1,1,2-Trichloroethane      | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| Benzene                    | 12 JB  | 12 JB  | 6 J   | 12 JB  | 5 U  | 4 J   | 11 J  |
| Trans-1,3-Dichloropropene  | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| Bromoform                  | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| 4-Methyl-2-pentanone       | 500 U  | 500 U  | 500 U | 500 U  | 10 U | 500 U | 500 U |
| 2-Hexanone                 | 500 U  | 500 U  | 500 U | 500 U  | 10 U | 500 U | 500 U |
| Tetrachloroethene          | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |
| 1,1,2,2-Tetrachloroethane  | 25 U   | 25 U   | 25 U  | 25 U   | 5 U  | 25 U  | 25 U  |

\*= Outside of EPA CLP QC limits.

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Work Order: 02281012012 Page: 5b

Client: COB-HOT GAS

RFW Batch Number: 9602L953

VBLKRU

Cust ID:

AFTOUT-VOST-

AFTOUT-VOST-

VBLKRY

R3-TP6F

R3-COND

96LVQ015-MB1

96LVQ018-MB1

RFW#:

025

026

027

028

|                         |     |   |     |   |     |   |    |   |     |   |     |   |
|-------------------------|-----|---|-----|---|-----|---|----|---|-----|---|-----|---|
| Toluene                 | 25  | U | 5   | J | 25  | U | 5  | U | 25  | U | 25  | U |
| Chlorobenzene           | 25  | U | 25  | U | 25  | U | 5  | U | 25  | U | 25  | U |
| Ethylbenzene            | 25  | U | 25  | U | 25  | U | 5  | U | 25  | U | 25  | U |
| Styrene                 | 25  | U | 25  | U | 25  | U | 5  | U | 25  | U | 25  | U |
| Xylene (total)          | 3   | J | 25  | U | 25  | U | 5  | U | 25  | U | 25  | U |
| 2-chloroethylvinylether | 100 | U | 100 | U | 100 | U | 10 | U | 100 | U | 100 | U |

\*= Outside of EPA CLP QC limits.

RFW Batch Number: 9602L953

Client: COB-HOT GAS

VOST TUBE BY GC/MS

Cust ID: VBLKRX

VBLKRO

VBLKRO BS

VBLKSE

Sample

RFW#: 96LVQ017-MB1 96LVK031-MB1 96LVQ019-MB1

Information

Matrix: AIR WATER WATER AIR

D.F.:

1.00 1.00 1.00

Units:

total ng ug/L total ng

| Surrogate                      | Toluene-d8 | 125 | % | 99 | % | 98  | %  | 93  | % |
|--------------------------------|------------|-----|---|----|---|-----|----|-----|---|
| Bromofluorobenzene             |            | 109 | % | 90 | % | 93  | %  | 84  | % |
| Recovery 1,2-Dichloroethane-d4 |            | 118 | % | 90 | % | 98  | %  | 79  | % |
| Chloromethane                  |            | 28  | J | 10 | U | 10  | U  | 50  | U |
| Bromomethane                   |            | 50  | U | 10 | U | 10  | U  | 22  | J |
| Vinyl Chloride                 |            | 50  | U | 10 | U | 10  | U  | 50  | U |
| Chloroethane                   |            | 50  | U | 10 | U | 10  | U  | 50  | U |
| Methylene Chloride             |            | 33  |   | 2  | J | 4   | JB | 25  |   |
| Acetone                        |            | 500 | U | 10 | U | 10  | U  | 500 | U |
| Carbon Disulfide               |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| 1,1-Dichloroethene             |            | 25  | U | 5  | U | 114 | %  | 25  | U |
| 1,1-Dichloroethane             |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| 1,2-Dichloroethene (trans)     |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| Chloroform                     |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| 1,2-Dichloroethane             |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| 2-Butanone                     |            | 500 | U | 10 | U | 10  | U  | 500 | U |
| 1,1,1-Trichloroethane          |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| Carbon Tetrachloride           |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| Vinyl Acetate                  |            | 100 | U | 10 | U | 10  | U  | 100 | U |
| Bromodichloromethane           |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| 1,2-Dichloropropane            |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| cis-1,3-Dichloropropene        |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| Trichloroethene                |            | 25  | U | 5  | U | 115 | %  | 25  | U |
| Dibromochloromethane           |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| 1,1,2-Trichloroethane          |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| Benzene                        |            | 9   | J | 5  | U | 114 | %  | 25  | U |
| Trans-1,3-Dichloropropene      |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| Bromoform                      |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| 4-Methyl-2-pentanone           |            | 500 | U | 10 | U | 10  | U  | 500 | U |
| 2-Hexanone                     |            | 500 | U | 10 | U | 10  | U  | 500 | U |
| Tetrachloroethene              |            | 25  | U | 5  | U | 5   | U  | 25  | U |
| 1,1,2,2-Tetrachloroethane      |            | 25  | U | 5  | U | 5   | U  | 25  | U |

\*= Outside of EPA CLP QC limits.

RFW#: 96LVQ017-MB1    96LVK031-MB1    96LVQ019-MB1

|                         |     |   |    |   |     |   |     |   |
|-------------------------|-----|---|----|---|-----|---|-----|---|
| Toluene                 | 25  | U | 5  | U | 108 | % | 25  | U |
| Chlorobenzene           | 25  | U | 5  | U | 105 | % | 25  | U |
| Ethylbenzene            | 25  | U | 5  | U | 5   | U | 25  | U |
| Styrene                 | 25  | U | 5  | U | 5   | U | 25  | U |
| Xylene (total)          | 25  | U | 5  | U | 5   | U | 25  | U |
| 2-chloroethylvinylether | 100 | U | 10 | U | 10  | U | 100 | U |

\*= Outside of EPA CLP QC limits.

**CASE NARRATIVE**





Roy F. Weston, Inc.  
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Lionville, Pennsylvania 19341-1333  
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## LIONVILLE LABORATORY ANALYTICAL REPORT

Client : COE-HOT GAS  
RFW # : 9602L953

W.O # : 02281-012-012-9999-00  
Date Received: 07 February 1996

### GC/MS VOLATILE

The set of samples consisted of two (2) water samples and thirteen (13) air samples collected on VOST cartridges {i.e., pairs - front (tenax) and back (tenax/charcoal)} on 02,04 February 1996.

The samples were analyzed according to criteria set forth in SW 846 Method 5040/8240 for Volatile Organic target compounds on 09,10,11,12,13 February 1996.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The required holding time for analysis was met.
2. Non-target compounds were detected in these samples.
3. Six (6) of one-hundred-two (102) surrogate recoveries were outside QC limits.
4. All blank spike recoveries were within QC limits.
5. The method blanks contained the common contaminant Methylene Chloride at levels less than 3x the CRQL. The method blank 96LVQ018-MB1 also contained the target compounds Bromomethane and Benzene at levels less than the CRQL; the method blank 96LVQ015-MB1 also contained the target compound Benzene at a level less than the CRQL; the method blank 96LVQ019-MB1 also contained the target compound Bromomethane at a level less than the CRQL; and the method blank 96LVQ017-MB1 also contained the target compounds Chloromethane and Benzene at levels less than the CRQL.
6. Internal standard areas were outside QC limits for samples AFTOUT-VOST-R3-COND and AFTOUT-VOST-R2-TP2F. Sample AFTOUT-VOST-R3-COND was reanalyzed on 14 February 1996 and yielded similar results. The reanalysis results are available upon request.

020





7. The calibration data has been reported using CLP Forms 6 and 7; however, VOST calibrations should not be expected to meet the calibration criteria specified on these forms.
8. The sample IDs were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters.

FOR Bruce C. Phillips, unit leader  
J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2-21-96  
Date

## GLOSSARY OF VOA DATA

### DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



## GLOSSARY OF VOA DATA

### ABBREVIATIONS

|       |   |                                                                                                                                                                                  |
|-------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BS    | = | Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported. |
| BSD   | = | Indicates blank spike duplicate.                                                                                                                                                 |
| MS    | = | Indicates matrix spike.                                                                                                                                                          |
| MSD   | = | Indicates matrix spike duplicate.                                                                                                                                                |
| DL    | = | Suffix added to sample number to indicate that results are from a diluted analysis.                                                                                              |
| NA    | = | Not Applicable.                                                                                                                                                                  |
| DF    | = | Dilution Factor.                                                                                                                                                                 |
| NR    | = | Not Required.                                                                                                                                                                    |
| SP, Z | = | Indicates Spiked Compound.                                                                                                                                                       |

## TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP - Missed Peak: manually added peak not found by automatic quan program.
- PA - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

**QC SUMMARY**

2A  
AIR VOLATILE SURROGATE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

|    | EPA<br>SAMPLE NO.   | S1<br>(DCE) # | S2<br>(TOL) # | S3<br>(BFB) # | OTHER | TOT<br>OUT |
|----|---------------------|---------------|---------------|---------------|-------|------------|
|    | =====               | =====         | =====         | =====         | ===== | =====      |
| 01 | VBLKRU              | 98            | 127           | 101           |       | 0          |
| 02 | AFTOUT-VOST-R2-TP1B | 93            | 92            | 99            |       | 0          |
| 03 | AFTOUT-VOST-R2-TP2B | 78            | 84            | 113           |       | 0          |
| 04 | AFTOUT-VOST-R2-TP3B | 92            | 90            | 114           |       | 0          |
| 05 | AFTOUT-VOST-R2-TP4B | 90            | 85            | 125           |       | 0          |
| 06 | VBLKRX              | 118           | 125           | 109           |       | 0          |
| 07 | AFTOUT-VOST-R2-TP5B | 105           | 106           | 129           |       | 0          |
| 08 | AFTOUT-VOST-R2-TP6B | 88            | 81            | 118           |       | 0          |
| 09 | AFTOUT-VOST-SB-TP1B | 96            | 110           | 101           |       | 0          |
| 10 | AFTOUT-VOST-R3-TP1B | 106           | 94            | 137           |       | 0          |
| 11 | AFTOUT-VOST-R3-TP2B | 117           | 104           | 179*          |       | 1          |
| 12 | AFTOUT-VOST-R3-TP3B | 108           | 101           | 165*          |       | 1          |
| 13 | AFTOUT-VOST-R3-TP4B | 121           | 107           | 190*          |       | 1          |
| 14 | AFTOUT-VOST-R3-TP5B | 111           | 116           | 179*          |       | 1          |
| 15 | AFTOUT-VOST-R3-TP6B | 116           | 111           | 179*          |       | 1          |
| 16 | VBLKRY              | 106           | 147           | 113           |       | 0          |
| 17 | AFTOUT-VOST-R2-TP1F | 93            | 90            | 124           |       | 0          |
| 18 | AFTOUT-VOST-R2-TP2F | 65            | 106           | 113           |       | 0          |
| 19 | AFTOUT-VOST-R2-TP3F | 70            | 88            | 102           |       | 0          |
| 20 | AFTOUT-VOST-R2-TP4F | 95            | 99            | 133           |       | 0          |
| 21 | AFTOUT-VOST-R2-TP5F | 82            | 97            | 130           |       | 0          |
| 22 | AFTOUT-VOST-R2-TP6F | 68            | 102           | 113           |       | 0          |
| 23 | AFTOUT-VOST-SB-TP1F | 83            | 90            | 124           |       | 0          |
| 24 | AFTOUT-VOST-R3-TP1F | 86            | 115           | 113           |       | 0          |
| 25 | VBLKSE              | 79            | 93            | 84            |       | 0          |
| 26 | AFTOUT-VOST-R3-TP2F | 108           | 96            | 109           |       | 0          |
| 27 | AFTOUT-VOST-R3-TP3F | 124           | 95            | 140           |       | 0          |
| 28 | AFTOUT-VOST-R3-TP4F | 102           | 114           | 160*          |       | 1          |
| 29 | AFTOUT-VOST-R3-TP5F | 80            | 84            | 98            |       | 0          |
| 30 | AFTOUT-VOST-R3-TP6F | 92            | 96            | 125           |       | 0          |

QC LIMITS

S1 (DCE) = 1,2-Dichloroethane-d4 (50-150)

S2 (TOL) = Toluene-d8 (50-150)

S3 (BFB) = Bromofluorobenzene (50-150)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

D Surrogates diluted out

2A  
WATER VOLATILE SURROGATE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

|    | EPA<br>SAMPLE NO.   | S1<br>(DCE) # | S2<br>(TOL) # | S3<br>(BFB) # | OTHER | TOT<br>OUT |
|----|---------------------|---------------|---------------|---------------|-------|------------|
|    | =====               | =====         | =====         | =====         | ===== | =====      |
| 01 | VBLKRO              | 90            | 99            | 90            |       | 0          |
| 02 | VBLKROMS            | 98            | 98            | 93            |       | 0          |
| 03 | AFTOUT-VOST-R2-COND | 96            | 102           | 98            |       | 0          |
| 04 | AFTOUT-VOST-R3-COND | 98            | 100           | 96            |       | 0          |
| 05 |                     |               |               |               |       |            |
| 06 |                     |               |               |               |       |            |
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| 30 |                     |               |               |               |       |            |

QC LIMITS  
 S1 (DCE) = 1,2-Dichloroethane-d4 (76-114)  
 S2 (TOL) = Toluene-d8 (88-110)  
 S3 (BFB) = Bromofluorobenzene (86-115)

# Column to be used to flag recovery values

\* Values outside of contract required QC limits

D Surrogates diluted out



FORM 3  
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Matrix Spike - EPA CLP PR Sample No.: VBLKRO

| COMPOUND           | SPIKE<br>ADDED<br>(UG/L) | BLANK<br>CONCENTRATION<br>(UG/L) | BS<br>CONCENTRATION<br>(UG/L) | BS<br>%<br>REC # | QC.<br>LIMITS<br>REC. |
|--------------------|--------------------------|----------------------------------|-------------------------------|------------------|-----------------------|
| =====              | =====                    | =====                            | =====                         | =====            | =====                 |
| 1,1-Dichloroethene | 50.000                   | 0.0000                           | 56.757                        | 114              | 61-145                |
| Trichloroethene    | 50.000                   | 0.0000                           | 57.350                        | 115              | 71-120                |
| Benzene            | 50.000                   | 0.0000                           | 56.933                        | 114              | 76-127                |
| Toluene            | 50.000                   | 0.0000                           | 54.030                        | 108              | 76-125                |
| Chlorobenzene      | 50.000                   | 0.0000                           | 52.673                        | 105              | 75-130                |

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III VOA

023

4A  
VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00  
 Lab Code: Case No.: SAS No.: SDG No.: 9602L953  
 Lab File ID: K2905 Lab Sample ID: 96LVK031-MB1  
 Date Analyzed: 02/09/96 Time Analyzed: 1449  
 Matrix: (soil/water) WATER Level: (low/med) LOW  
 Instrument ID: 5970K

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|
| 01 | VBLKROMS            | 96LVK031-MB1S    | K2906          | 1532             |
| 02 | AFTOUT-VOST-R2-COND | 9602L953-013     | K2909          | 1724             |
| 03 | AFTOUT-VOST-R3-COND | 9602L953-028     | K2910          | 1759             |
| 04 |                     |                  |                |                  |
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COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00  
 Lab Code: Case No.: SAS No.: SDG No.: 9602L953  
 Lab File ID: Q021005 Lab Sample ID: 96LVQ015-MB1  
 Date Analyzed: 02/10/96 Time Analyzed: 1621  
 Matrix: (soil/water) AIR Level: (low/med) \_\_\_\_\_  
 Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|
|    | =====               | =====            | =====          | =====            |
| 01 | AFTOUT-VOST-R2-TP1B | 9602L953-002     | Q021009        | 1949             |
| 02 | AFTOUT-VOST-R2-TP2B | 9602L953-004     | Q021010        | 2036             |
| 03 | AFTOUT-VOST-R2-TP3B | 9602L953-006     | Q021012        | 2203             |
| 04 | AFTOUT-VOST-R2-TP4B | 9602L953-008     | Q021013        | 2247             |
| 05 |                     |                  |                |                  |
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COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00  
 Lab Code: Case No.: SAS No.: SDG No.: 9602L953  
 Lab File ID: Q021106 Lab Sample ID: 96LVQ017-MB1  
 Date Analyzed: 02/11/96 Time Analyzed: 1634  
 Matrix: (soil/water) AIR Level: (low/med) \_\_\_\_\_  
 Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|
|    | =====               | =====            | =====          | =====            |
| 01 | AFTOUT-VOST-R2-TP5B | 9602L953-010     | Q021107        | 1716             |
| 02 | AFTOUT-VOST-R2-TP6B | 9602L953-012     | Q021109        | 1833             |
| 03 | AFTOUT-VOST-SB-TP1B | 9602L953-015     | Q021110        | 1912             |
| 04 | AFTOUT-VOST-R3-TP1B | 9602L953-017     | Q021111        | 1949             |
| 05 | AFTOUT-VOST-R3-TP2B | 9602L953-019     | Q021112        | 2027             |
| 06 | AFTOUT-VOST-R3-TP3B | 9602L953-021     | Q021113        | 2103             |
| 07 | AFTOUT-VOST-R3-TP4B | 9602L953-023     | Q021114        | 2141             |
| 08 | AFTOUT-VOST-R3-TP5B | 9602L953-025     | Q021117        | 2357             |
| 09 | AFTOUT-VOST-R3-TP6B | 9602L953-027     | Q021119        | 0103             |
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COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON                      Contract: 02281-012-012-9999-00  
 Lab Code:                      Case No.:                      SAS No.:                      SDG No.: 9602L953  
 Lab File ID:                      Q021218                      Lab Sample ID: 96LVQ018-MB1  
 Date Analyzed:                      02/12/96                      Time Analyzed:                      1859  
 Matrix: (soil/water) AIR                      Level: (low/med) \_\_\_\_\_  
 Instrument ID:                      1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|
|    | =====               | =====            | =====          | =====            |
| 01 | AFTOUT-VOST-R2-TP1F | 9602L953-001     | Q021219        | 2045             |
| 02 | AFTOUT-VOST-R2-TP2F | 9602L953-003     | Q021220        | 2141             |
| 03 | AFTOUT-VOST-R2-TP3F | 9602L953-005     | Q021221        | 2229             |
| 04 | AFTOUT-VOST-R2-TP4F | 9602L953-007     | Q021222        | 2325             |
| 05 | AFTOUT-VOST-R2-TP5F | 9602L953-009     | Q021223        | 0009             |
| 06 | AFTOUT-VOST-R2-TP6F | 9602L953-011     | Q021224        | 0059             |
| 07 | AFTOUT-VOST-SB-TP1F | 9602L953-014     | Q021225        | 0141             |
| 08 | AFTOUT-VOST-R3-TP1F | 9602L953-016     | Q021226        | 0223             |
| 09 |                     |                  |                |                  |
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COMMENTS: \_\_\_\_\_

4A  
VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00  
 Lab Code: Case No.: SAS No.: SDG No.: 9602L953  
 Lab File ID: Q021305 Lab Sample ID: 96LVQ019-MB1  
 Date Analyzed: 02/13/96 Time Analyzed: 1018  
 Matrix: (soil/water) AIR Level: (low/med) \_\_\_\_\_  
 Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|
|    | =====               | =====            | =====          | =====            |
| 01 | AFTOUT-VOST-R3-TP2F | 9602L953-018     | Q021306        | 1155             |
| 02 | AFTOUT-VOST-R3-TP3F | 9602L953-020     | Q021309        | 1459             |
| 03 | AFTOUT-VOST-R3-TP4F | 9602L953-022     | Q021310        | 1602             |
| 04 | AFTOUT-VOST-R3-TP5F | 9602L953-024     | Q021311        | 1654             |
| 05 | AFTOUT-VOST-R3-TP6F | 9602L953-026     | Q021312        | 1731             |
| 06 |                     |                  |                |                  |
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COMMENTS: \_\_\_\_\_

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID: K2404

BFB Injection Date: 02/04/96

Instrument ID: 5970K

BFB Injection Time: 1107

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 19.9                 |
| 75  | 30.0 - 60.0% of mass 95            | 50.9                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 7.5                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 80.0                 |
| 175 | 5.0 - 9.0% of mass 174             | 6.3 ( 7.9)1          |
| 176 | 95.0 - 100.9% of mass 174          | 79.7 ( 99.6)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.8 ( 6.0)2          |

1-Value is % of mass 174

2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|-------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD200           | VSTD200          | K2405          | 02/04/96         | 1122             |
| 02 | VSTD100           | VSTD100          | K2406          | 02/04/96         | 1158             |
| 03 | VSTD020           | VSTD020          | K2407          | 02/04/96         | 1233             |
| 04 | VSTD010           | VSTD010          | K2408          | 02/04/96         | 1307             |
| 05 | VSTD050           | VSTD050          | K2409          | 02/04/96         | 1347             |
| 06 |                   |                  |                |                  |                  |
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| 20 |                   |                  |                |                  |                  |
| 21 |                   |                  |                |                  |                  |
| 22 |                   |                  |                |                  |                  |

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00  
Lab Code: Case No.: SAS No.: SDG No.: 9602L953  
Lab File ID: K2901 BFB Injection Date: 02/09/96  
Instrument ID: 5970K BFB Injection Time: 1217  
Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 20.7                 |
| 75  | 30.0 - 60.0% of mass 95            | 50.8                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 7.4                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 86.2                 |
| 175 | 5.0 - 9.0% of mass 174             | 6.7 ( 7.8)1          |
| 176 | 95.0 - 100.9% of mass 174          | 83.5 ( 96.8)1        |
| 177 | 5.0 - 9.0% of mass 176             | 5.4 ( 6.5)2          |

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD050             | VSTD050          | K2903          | 02/09/96         | 1310             |
| 02 | VBLKRO              | 96LVK031-MB1     | K2905          | 02/09/96         | 1449             |
| 03 | VBLKROMS            | 96LVK031-MB1S    | K2906          | 02/09/96         | 1532             |
| 04 | AFTOUT-VOST-R2-COND | 9602L953-013     | K2909          | 02/09/96         | 1724             |
| 05 | AFTOUT-VOST-R3-COND | 9602L953-028     | K2910          | 02/09/96         | 1759             |
| 06 |                     |                  |                |                  |                  |
| 07 |                     |                  |                |                  |                  |
| 08 |                     |                  |                |                  |                  |
| 09 |                     |                  |                |                  |                  |
| 10 |                     |                  |                |                  |                  |
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| 13 |                     |                  |                |                  |                  |
| 14 |                     |                  |                |                  |                  |
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| 18 |                     |                  |                |                  |                  |
| 19 |                     |                  |                |                  |                  |
| 20 |                     |                  |                |                  |                  |
| 21 |                     |                  |                |                  |                  |
| 22 |                     |                  |                |                  |                  |



5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID: Q020801

BFB Injection Date: 02/08/96

Instrument ID: 1050Q

BFB Injection Time: 1357

Matrix: (soil/water) AIR

Level: (low/med) LOW

Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 15.4                 |
| 75  | 30.0 - 60.0% of mass 95            | 39.0                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 7.6                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 90.7                 |
| 175 | 5.0 - 9.0% of mass 174             | 6.6 ( 7.3)1          |
| 176 | 95.0 - 100.9% of mass 174          | 90.5 ( 99.8)1        |
| 177 | 5.0 - 9.0% of mass 176             | 7.1 ( 7.9)2          |

1-Value is % of mass 174

2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|-------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD500           | VSTD500          | Q020803        | 02/08/96         | 1518             |
| 02 | VSTD1000          | VSTD1000         | Q020804        | 02/08/96         | 1600             |
| 03 | VSTD2000          | VSTD2000         | Q020805        | 02/08/96         | 1636             |
| 04 | VSTD100           | VSTD100          | Q020807        | 02/08/96         | 1749             |
| 05 |                   |                  |                |                  |                  |
| 06 |                   |                  |                |                  |                  |
| 07 |                   |                  |                |                  |                  |
| 08 |                   |                  |                |                  |                  |
| 09 |                   |                  |                |                  |                  |
| 10 |                   |                  |                |                  |                  |
| 11 |                   |                  |                |                  |                  |
| 12 |                   |                  |                |                  |                  |
| 13 |                   |                  |                |                  |                  |
| 14 |                   |                  |                |                  |                  |
| 15 |                   |                  |                |                  |                  |
| 16 |                   |                  |                |                  |                  |
| 17 |                   |                  |                |                  |                  |
| 18 |                   |                  |                |                  |                  |
| 19 |                   |                  |                |                  |                  |
| 20 |                   |                  |                |                  |                  |
| 21 |                   |                  |                |                  |                  |
| 22 |                   |                  |                |                  |                  |

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID: Q021001

BFB Injection Date: 02/10/96

Instrument ID: 1050Q

BFB Injection Time: 1225

Matrix: (soil/water) AIR      Level: (low/med) LOW      Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 22.3                 |
| 75  | 30.0 - 60.0% of mass 95            | 46.4                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 6.7                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 57.3                 |
| 175 | 5.0 - 9.0% of mass 174             | 3.9 ( 6.7)1          |
| 176 | 95.0 - 100.9% of mass 174          | 57.7 (100.6)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.0 ( 7.0)2          |

1-Value is % of mass 174      2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD500             | VSTD500          | Q021003        | 02/10/96         | 1440             |
| 02 | VBLKRU              | 96LVQ015-MB1     | Q021005        | 02/10/96         | 1621             |
| 03 | AFTOUT-VOST-R2-TP1B | 9602L953-002     | Q021009        | 02/10/96         | 1949             |
| 04 | AFTOUT-VOST-R2-TP2B | 9602L953-004     | Q021010        | 02/10/96         | 2036             |
| 05 | AFTOUT-VOST-R2-TP3B | 9602L953-006     | Q021012        | 02/10/96         | 2203             |
| 06 | AFTOUT-VOST-R2-TP4B | 9602L953-008     | Q021013        | 02/10/96         | 2247             |
| 07 |                     |                  |                |                  |                  |
| 08 |                     |                  |                |                  |                  |
| 09 |                     |                  |                |                  |                  |
| 10 |                     |                  |                |                  |                  |
| 11 |                     |                  |                |                  |                  |
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| 14 |                     |                  |                |                  |                  |
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| 18 |                     |                  |                |                  |                  |
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| 20 |                     |                  |                |                  |                  |
| 21 |                     |                  |                |                  |                  |
| 22 |                     |                  |                |                  |                  |

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID: Q021101

BFB Injection Date: 02/11/96

Instrument ID: 1050Q

BFB Injection Time: 1309

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

BK 212014

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 19.7                 |
| 75  | 30.0 - 60.0% of mass 95            | 43.8                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 6.6                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 62.6                 |
| 175 | 5.0 - 9.0% of mass 174             | 4.5 ( 7.1)1          |
| 176 | 95.0 - 100.9% of mass 174          | 61.7 ( 98.4)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.9 ( 8.0)2          |

1-Value is % of mass 174

2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD500             | VSTD500          | Q021103        | 02/11/96         | 1424             |
| 02 | VBLKRX              | 96LVQ017-MB1     | Q021106        | 02/11/96         | 1634             |
| 03 | AFTOUT-VOST-R2-TP5B | 9602L953-010     | Q021107        | 02/11/96         | 1716             |
| 04 | AFTOUT-VOST-R2-TP6B | 9602L953-012     | Q021109        | 02/11/96         | 1833             |
| 05 | AFTOUT-VOST-SB-TP1B | 9602L953-015     | Q021110        | 02/11/96         | 1912             |
| 06 | AFTOUT-VOST-R3-TP1B | 9602L953-017     | Q021111        | 02/11/96         | 1949             |
| 07 | AFTOUT-VOST-R3-TP2B | 9602L953-019     | Q021112        | 02/11/96         | 2027             |
| 08 | AFTOUT-VOST-R3-TP3B | 9602L953-021     | Q021113        | 02/11/96         | 2103             |
| 09 | AFTOUT-VOST-R3-TP4B | 9602L953-023     | Q021114        | 02/11/96         | 2141             |
| 10 | AFTOUT-VOST-R3-TP5B | 9602L953-025     | Q021117        | 02/11/96         | 2357             |
| 11 | AFTOUT-VOST-R3-TP6B | 9602L953-027     | Q021119        | 02/12/96         | 0103             |
| 12 |                     |                  |                |                  |                  |
| 13 |                     |                  |                |                  |                  |
| 14 |                     |                  |                |                  |                  |
| 15 |                     |                  |                |                  |                  |
| 16 |                     |                  |                |                  |                  |
| 17 |                     |                  |                |                  |                  |
| 18 |                     |                  |                |                  |                  |
| 19 |                     |                  |                |                  |                  |
| 20 |                     |                  |                |                  |                  |
| 21 |                     |                  |                |                  |                  |
| 22 |                     |                  |                |                  |                  |

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID: Q021202

BFB Injection Date: 02/12/96

Instrument ID: 1050Q

BFB Injection Time: 0155

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

BFL 2/20/96

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 21.4                 |
| 75  | 30.0 - 60.0% of mass 95            | 48.3                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 7.3                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 65.9                 |
| 175 | 5.0 - 9.0% of mass 174             | 4.7 ( 7.1)1          |
| 176 | 95.0 - 100.9% of mass 174          | 66.0 (100.2)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.6 ( 7.0)2          |

1-Value is % of mass 174

2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO. | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|-------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD1000          | VSTD1000         | Q021205        | 02/12/96         | 0359             |
| 02 | VSTD2000          | VSTD2000         | Q021206        | 02/12/96         | 0437             |
| 03 | VSTD500           | VSTD500          | Q021207        | 02/12/96         | 0527             |
| 04 | VSTD100           | VSTD100          | Q021212        | 02/12/96         | 1309             |
| 05 |                   |                  |                |                  |                  |
| 06 |                   |                  |                |                  |                  |
| 07 |                   |                  |                |                  |                  |
| 08 |                   |                  |                |                  |                  |
| 09 |                   |                  |                |                  |                  |
| 10 |                   |                  |                |                  |                  |
| 11 |                   |                  |                |                  |                  |
| 12 |                   |                  |                |                  |                  |
| 13 |                   |                  |                |                  |                  |
| 14 |                   |                  |                |                  |                  |
| 15 |                   |                  |                |                  |                  |
| 16 |                   |                  |                |                  |                  |
| 17 |                   |                  |                |                  |                  |
| 18 |                   |                  |                |                  |                  |
| 19 |                   |                  |                |                  |                  |
| 20 |                   |                  |                |                  |                  |
| 21 |                   |                  |                |                  |                  |
| 22 |                   |                  |                |                  |                  |

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00  
Lab Code: Case No.: SAS No.: SDG No.: 9602L953  
Lab File ID: Q021214 BFB Injection Date: 02/12/96  
Instrument ID: 1050Q <sup>WJ</sup>2/21/96 BFB Injection Time: 1600  
Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 19.4                 |
| 75  | 30.0 - 60.0% of mass 95            | 44.8                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 7.2                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 68.2                 |
| 175 | 5.0 - 9.0% of mass 174             | 5.0 ( 7.4)1          |
| 176 | 95.0 - 100.9% of mass 174          | 68.8 (100.8)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.5 ( 6.6)2          |

1-Value is % of mass 174 2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD500             | VSTD500          | Q021216        | 02/12/96         | 1723             |
| 02 | VBLKRY              | 96LVQ018-MB1     | Q021218        | 02/12/96         | 1859             |
| 03 | AFTOUT-VOST-R2-TP1F | 9602L953-001     | Q021219        | 02/12/96         | 2045             |
| 04 | AFTOUT-VOST-R2-TP2F | 9602L953-003     | Q021220        | 02/12/96         | 2141             |
| 05 | AFTOUT-VOST-R2-TP3F | 9602L953-005     | Q021221        | 02/12/96         | 2229             |
| 06 | AFTOUT-VOST-R2-TP4F | 9602L953-007     | Q021222        | 02/12/96         | 2325             |
| 07 | AFTOUT-VOST-R2-TP5F | 9602L953-009     | Q021223        | 02/13/96         | 0009             |
| 08 | AFTOUT-VOST-R2-TP6F | 9602L953-011     | Q021224        | 02/13/96         | 0059             |
| 09 | AFTOUT-VOST-SB-TP1F | 9602L953-014     | Q021225        | 02/13/96         | 0141             |
| 10 | AFTOUT-VOST-R3-TP1F | 9602L953-016     | Q021226        | 02/13/96         | 0223             |
| 11 |                     |                  |                |                  |                  |
| 12 |                     |                  |                |                  |                  |
| 13 |                     |                  |                |                  |                  |
| 14 |                     |                  |                |                  |                  |
| 15 |                     |                  |                |                  |                  |
| 16 |                     |                  |                |                  |                  |
| 17 |                     |                  |                |                  |                  |
| 18 |                     |                  |                |                  |                  |
| 19 |                     |                  |                |                  |                  |
| 20 |                     |                  |                |                  |                  |
| 21 |                     |                  |                |                  |                  |
| 22 |                     |                  |                |                  |                  |

5A  
VOLATILE ORGANIC GC/MS TUNING AND MASS  
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID: Q021301

BFB Injection Date: 02/13/96

Instrument ID: 1050Q <sup>MT</sup> 2/21/96

BFB Injection Time: 0650

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

| m/e | ION ABUNDANCE CRITERIA             | % RELATIVE ABUNDANCE |
|-----|------------------------------------|----------------------|
| 50  | 15.0 - 40.0% of mass 95            | 18.3                 |
| 75  | 30.0 - 60.0% of mass 95            | 42.4                 |
| 95  | Base Peak, 100% relative abundance | 100.0                |
| 96  | 5.0 - 9.0% of mass 95              | 6.2                  |
| 173 | Less than 2.0% of mass 174         | 0.0 ( 0.0)1          |
| 174 | 50.0 - 100.0% of mass 95           | 66.2                 |
| 175 | 5.0 - 9.0% of mass 174             | 4.4 ( 6.6)1          |
| 176 | 95.0 - 100.9% of mass 174          | 66.7 (100.7)1        |
| 177 | 5.0 - 9.0% of mass 176             | 4.7 ( 7.0)2          |

1-Value is % of mass 174                      2-Value is % of mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

|    | EPA<br>SAMPLE NO.   | LAB<br>SAMPLE ID | LAB<br>FILE ID | DATE<br>ANALYZED | TIME<br>ANALYZED |
|----|---------------------|------------------|----------------|------------------|------------------|
| 01 | VSTD500             | VSTD500          | Q021303        | 02/13/96         | 0824             |
| 02 | VBLKSE              | 96LVQ019-MB1     | Q021305        | 02/13/96         | 1018             |
| 03 | AFTOUT-VOST-R3-TP2F | 9602L953-018     | Q021306        | 02/13/96         | 1155             |
| 04 | AFTOUT-VOST-R3-TP3F | 9602L953-020     | Q021309        | 02/13/96         | 1459             |
| 05 | AFTOUT-VOST-R3-TP4F | 9602L953-022     | Q021310        | 02/13/96         | 1602             |
| 06 | AFTOUT-VOST-R3-TP5F | 9602L953-024     | Q021311        | 02/13/96         | 1654             |
| 07 | AFTOUT-VOST-R3-TP6F | 9602L953-026     | Q021312        | 02/13/96         | 1731             |
| 08 |                     |                  |                |                  |                  |
| 09 |                     |                  |                |                  |                  |
| 10 |                     |                  |                |                  |                  |
| 11 |                     |                  |                |                  |                  |
| 12 |                     |                  |                |                  |                  |
| 13 |                     |                  |                |                  |                  |
| 14 |                     |                  |                |                  |                  |
| 15 |                     |                  |                |                  |                  |
| 16 |                     |                  |                |                  |                  |
| 17 |                     |                  |                |                  |                  |
| 18 |                     |                  |                |                  |                  |
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| 20 |                     |                  |                |                  |                  |
| 21 |                     |                  |                |                  |                  |
| 22 |                     |                  |                |                  |                  |

8A  
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00  
 Lab Code: Case No.: SAS No.: SDG No.: 9602L953  
 Lab File ID (Standard): K2903 Date Analyzed: 02/09/96  
 Instrument ID: 5970K Time Analyzed: 1310  
 Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

|                        | IS1 (BCM) | RT    | IS2 (DFB) | RT    | IS3 (CBZ) | RT    |
|------------------------|-----------|-------|-----------|-------|-----------|-------|
|                        | AREA #    |       | AREA #    |       | AREA #    |       |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| 12 HOUR STD            | 33265     | 7.37  | 117090    | 10.04 | 95025     | 16.73 |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| UPPER LIMIT            | 66530     | 7.87  | 234180    | 10.54 | 190050    | 17.23 |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| LOWER LIMIT            | 16632     | 6.87  | 58545     | 9.54  | 47512     | 16.23 |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| EPA SAMPLE<br>NO.      |           |       |           |       |           |       |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| 01 VBLKRO              | 31488     | 7.40  | 111067    | 10.06 | 90926     | 16.77 |
| 02 VBLKROMS            | 28385     | 7.41  | 97920     | 10.08 | 82571     | 16.79 |
| 03 AFTOUT-VOST-R2-COND | 24299     | 7.42  | 85463     | 10.08 | 70866     | 16.77 |
| 04 AFTOUT-VOST-R3-COND | 11732*    | 7.39  | 41601*    | 10.06 | 34682*    | 16.77 |
| 05                     |           |       |           |       |           |       |
| 06                     |           |       |           |       |           |       |
| 07                     |           |       |           |       |           |       |
| 08                     |           |       |           |       |           |       |
| 09                     |           |       |           |       |           |       |
| 10                     |           |       |           |       |           |       |
| 11                     |           |       |           |       |           |       |
| 12                     |           |       |           |       |           |       |
| 13                     |           |       |           |       |           |       |
| 14                     |           |       |           |       |           |       |
| 15                     |           |       |           |       |           |       |
| 16                     |           |       |           |       |           |       |
| 17                     |           |       |           |       |           |       |
| 18                     |           |       |           |       |           |       |
| 19                     |           |       |           |       |           |       |
| 20                     |           |       |           |       |           |       |
| 21                     |           |       |           |       |           |       |
| 22                     |           |       |           |       |           |       |

IS1 (BCM) = Bromochloromethane  
 IS2 (DFB) = 1,4-Difluorobenzene  
 IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk.

8A  
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID (Standard): Q021003

Date Analyzed: 02/10/96

Instrument ID: 1050Q

Time Analyzed: 1440

Matrix: (soil/water) AIR

Level: (low/med) LOW

Column: (pack/cap) CAP

|                        | IS1 (BCM)<br>AREA # | RT    | IS2 (DFB)<br>AREA # | RT    | IS3 (CBZ)<br>AREA # | RT    |
|------------------------|---------------------|-------|---------------------|-------|---------------------|-------|
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 12 HOUR STD            | 64073               | 13.40 | 388304              | 15.15 | 408945              | 19.37 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| UPPER LIMIT            | 128146              | 13.90 | 776608              | 15.65 | 817890              | 19.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| LOWER LIMIT            | 32036               | 12.90 | 194152              | 14.65 | 204472              | 18.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| EPA SAMPLE<br>NO.      |                     |       |                     |       |                     |       |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 01 VBLKRU              | 54534               | 13.40 | 329131              | 15.13 | 280207              | 19.35 |
| 02 AFTOUT-VOST-R2-TP1B | 60931               | 13.42 | 320130              | 15.15 | 319333              | 19.38 |
| 03 AFTOUT-VOST-R2-TP2B | 66334               | 13.40 | 402863              | 15.13 | 411670              | 19.35 |
| 04 AFTOUT-VOST-R2-TP3B | 64599               | 13.42 | 365282              | 15.15 | 390272              | 19.38 |
| 05 AFTOUT-VOST-R2-TP4B | 76089               | 13.40 | 417310              | 15.15 | 452388              | 19.37 |
| 06                     |                     |       |                     |       |                     |       |
| 07                     |                     |       |                     |       |                     |       |
| 08                     |                     |       |                     |       |                     |       |
| 09                     |                     |       |                     |       |                     |       |
| 10                     |                     |       |                     |       |                     |       |
| 11                     |                     |       |                     |       |                     |       |
| 12                     |                     |       |                     |       |                     |       |
| 13                     |                     |       |                     |       |                     |       |
| 14                     |                     |       |                     |       |                     |       |
| 15                     |                     |       |                     |       |                     |       |
| 16                     |                     |       |                     |       |                     |       |
| 17                     |                     |       |                     |       |                     |       |
| 18                     |                     |       |                     |       |                     |       |
| 19                     |                     |       |                     |       |                     |       |
| 20                     |                     |       |                     |       |                     |       |
| 21                     |                     |       |                     |       |                     |       |
| 22                     |                     |       |                     |       |                     |       |

IS1 (BCM) = Bromochloromethane  
IS2 (DFB) = 1,4-Difluorobenzene  
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk.



8A  
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON                      Contract: 02281-012-012-9999-00  
 Lab Code:                      Case No.:                      SAS No.:                      SDG No.: 9602L953  
 Lab File ID (Standard): Q021103                      Date Analyzed: 02/11/96  
 Instrument ID: 1050Q                      Time Analyzed: 1424  
 Matrix: (soil/water) AIR                      Level: (low/med) LOW                      Column: (pack/cap) CAP

|                        | IS1 (BCM)<br>AREA # | RT    | IS2 (DFB)<br>AREA # | RT    | IS3 (CBZ)<br>AREA # | RT    |
|------------------------|---------------------|-------|---------------------|-------|---------------------|-------|
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 12 HOUR STD            | 60428               | 13.42 | 382112              | 15.15 | 362053              | 19.37 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| UPPER LIMIT            | 120856              | 13.92 | 764224              | 15.65 | 724106              | 19.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| LOWER LIMIT            | 30214               | 12.92 | 191056              | 14.65 | 181026              | 18.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| EPA SAMPLE<br>NO.      |                     |       |                     |       |                     |       |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 01 VBLKRX              | 53830               | 13.42 | 325586              | 15.15 | 292751              | 19.37 |
| 02 AFTOUT-VOST-R2-TP5B | 51784               | 13.40 | 333278              | 15.13 | 342401              | 19.37 |
| 03 AFTOUT-VOST-R2-TP6B | 59503               | 13.40 | 361682              | 15.13 | 382517              | 19.37 |
| 04 AFTOUT-VOST-SB-TP1B | 57343               | 13.40 | 374774              | 15.13 | 335732              | 19.37 |
| 05 AFTOUT-VOST-R3-TP1B | 59689               | 13.40 | 342751              | 15.13 | 369346              | 19.37 |
| 06 AFTOUT-VOST-R3-TP2B | 68310               | 13.40 | 388538              | 15.13 | 427960              | 19.37 |
| 07 AFTOUT-VOST-R3-TP3B | 66381               | 13.42 | 392428              | 15.15 | 423803              | 19.38 |
| 08 AFTOUT-VOST-R3-TP4B | 66544               | 13.42 | 375930              | 15.15 | 408906              | 19.37 |
| 09 AFTOUT-VOST-R3-TP5B | 56585               | 13.42 | 362122              | 15.15 | 382911              | 19.38 |
| 10 AFTOUT-VOST-R3-TP6B | 61284               | 13.40 | 352164              | 15.13 | 383217              | 19.37 |
| 11                     |                     |       |                     |       |                     |       |
| 12                     |                     |       |                     |       |                     |       |
| 13                     |                     |       |                     |       |                     |       |
| 14                     |                     |       |                     |       |                     |       |
| 15                     |                     |       |                     |       |                     |       |
| 16                     |                     |       |                     |       |                     |       |
| 17                     |                     |       |                     |       |                     |       |
| 18                     |                     |       |                     |       |                     |       |
| 19                     |                     |       |                     |       |                     |       |
| 20                     |                     |       |                     |       |                     |       |
| 21                     |                     |       |                     |       |                     |       |
| 22                     |                     |       |                     |       |                     |       |

IS1 (BCM) = Bromochloromethane  
 IS2 (DFB) = 1,4-Difluorobenzene  
 IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk.

8A  
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID (Standard): Q021216

Date Analyzed: 02/12/96

Instrument ID: 1050Q

Time Analyzed: 1723

Matrix: (soil/water) AIR

Level: (low/med) LOW

Column: (pack/cap) CAP

|                        | IS1 (BCM)<br>AREA # | RT    | IS2 (DFB)<br>AREA # | RT    | IS3 (CBZ)<br>AREA # | RT    |
|------------------------|---------------------|-------|---------------------|-------|---------------------|-------|
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 12 HOUR STD            | 55850               | 13.40 | 322151              | 15.13 | 277119              | 19.37 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| UPPER LIMIT            | 111700              | 13.90 | 644302              | 15.63 | 554238              | 19.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| LOWER LIMIT            | 27925               | 12.90 | 161076              | 14.63 | 138560              | 18.87 |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| EPA SAMPLE<br>NO.      |                     |       |                     |       |                     |       |
| =====                  | =====               | ===== | =====               | ===== | =====               | ===== |
| 01 VBLKRY              | 46511               | 13.40 | 278739              | 15.13 | 196478              | 19.37 |
| 02 AFTOUT-VOST-R2-TP1F | 58528               | 13.40 | 381020              | 15.13 | 390990              | 19.35 |
| 03 AFTOUT-VOST-R2-TP2F | 20689*              | 13.42 | 202762              | 15.13 | 178835              | 19.37 |
| 04 AFTOUT-VOST-R2-TP3F | 39272               | 13.38 | 324086              | 15.12 | 321088              | 19.35 |
| 05 AFTOUT-VOST-R2-TP4F | 51871               | 13.40 | 362509              | 15.13 | 386271              | 19.37 |
| 06 AFTOUT-VOST-R2-TP5F | 46687               | 13.40 | 346682              | 15.13 | 342772              | 19.37 |
| 07 AFTOUT-VOST-R2-TP6F | 33639               | 13.40 | 300765              | 15.13 | 275524              | 19.37 |
| 08 AFTOUT-VOST-SB-TP1F | 57764               | 13.40 | 412484              | 15.13 | 429697              | 19.35 |
| 09 AFTOUT-VOST-R3-TP1F | 57303               | 13.38 | 408131              | 15.12 | 364517              | 19.35 |
| 10                     |                     |       |                     |       |                     |       |
| 11                     |                     |       |                     |       |                     |       |
| 12                     |                     |       |                     |       |                     |       |
| 13                     |                     |       |                     |       |                     |       |
| 14                     |                     |       |                     |       |                     |       |
| 15                     |                     |       |                     |       |                     |       |
| 16                     |                     |       |                     |       |                     |       |
| 17                     |                     |       |                     |       |                     |       |
| 18                     |                     |       |                     |       |                     |       |
| 19                     |                     |       |                     |       |                     |       |
| 20                     |                     |       |                     |       |                     |       |
| 21                     |                     |       |                     |       |                     |       |
| 22                     |                     |       |                     |       |                     |       |

IS1 (BCM) = Bromochloromethane  
IS2 (DFB) = 1,4-Difluorobenzene  
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100%  
of internal standard area.  
LOWER LIMIT = - 50%  
of internal standard area.

# Column used to flag internal standard area values with an asterisk.

8A  
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00  
 Lab Code: Case No.: SAS No.: SDG No.: 9602L953  
 Lab File ID (Standard): Q021303 Date Analyzed: 02/13/96  
 Instrument ID: 1050Q Time Analyzed: 0824  
 Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

|                        | IS1 (BCM) | RT    | IS2 (DFB) | RT    | IS3 (CBZ) | RT    |
|------------------------|-----------|-------|-----------|-------|-----------|-------|
|                        | AREA #    |       | AREA #    |       | AREA #    |       |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| 12 HOUR STD            | 54583     | 13.38 | 388751    | 15.12 | 337828    | 19.35 |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| UPPER LIMIT            | 109166    | 13.88 | 777502    | 15.62 | 675656    | 19.85 |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| LOWER LIMIT            | 27292     | 12.88 | 194376    | 14.62 | 168914    | 18.85 |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| EPA SAMPLE<br>NO.      |           |       |           |       |           |       |
| =====                  | =====     | ===== | =====     | ===== | =====     | ===== |
| 01 VBLKSE              | 45778     | 13.38 | 330378    | 15.12 | 246161    | 19.35 |
| 02 AFTOUT-VOST-R3-TP2F | 56927     | 13.38 | 357261    | 15.12 | 318660    | 19.35 |
| 03 AFTOUT-VOST-R3-TP3F | 48844     | 13.38 | 295315    | 15.12 | 283486    | 19.35 |
| 04 AFTOUT-VOST-R3-TP4F | 35498     | 13.40 | 276858    | 15.13 | 251379    | 19.35 |
| 05 AFTOUT-VOST-R3-TP5F | 32037     | 13.40 | 245577    | 15.13 | 215215    | 19.35 |
| 06 AFTOUT-VOST-R3-TP6F | 37432     | 13.38 | 278136    | 15.12 | 259141    | 19.33 |
| 07                     |           |       |           |       |           |       |
| 08                     |           |       |           |       |           |       |
| 09                     |           |       |           |       |           |       |
| 10                     |           |       |           |       |           |       |
| 11                     |           |       |           |       |           |       |
| 12                     |           |       |           |       |           |       |
| 13                     |           |       |           |       |           |       |
| 14                     |           |       |           |       |           |       |
| 15                     |           |       |           |       |           |       |
| 16                     |           |       |           |       |           |       |
| 17                     |           |       |           |       |           |       |
| 18                     |           |       |           |       |           |       |
| 19                     |           |       |           |       |           |       |
| 20                     |           |       |           |       |           |       |
| 21                     |           |       |           |       |           |       |
| 22                     |           |       |           |       |           |       |

IS1 (BCM) = Bromochloromethane  
 IS2 (DFB) = 1,4-Difluorobenzene  
 IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100%  
 of internal standard area.  
 LOWER LIMIT = - 50%  
 of internal standard area.

# Column used to flag internal standard area values with an asterisk.



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## DIOXINS AND FURANS

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**CASE NARRATIVE**

**Analysis of Samples for the Presence of  
Polychlorinated Dibenzo-*p*-Dioxins and Dibenzofurans by  
High-Resolution Chromatography / High-Resolution Mass Spectrometry**

**Method 23 (6/93)**

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|                            |                     |
|----------------------------|---------------------|
| <b>Date:</b>               | February 21, 1996   |
| <b>Client ID:</b>          | Roy F. Weston, Inc. |
| <b>P.O. Number:</b>        |                     |
| <b>TLI Project Number:</b> | 36062               |

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Rev. 06/02/95

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**Triangle Laboratories, Inc.**  
801 Capitola Drive  
Durham, NC 27713-4411  
919-544-5729

**P.O. Box 13485**  
Research Triangle Park, NC 27709-3485  
Fax # 919-544-5491

### Overview

Two M23 samples were received from Roy F. Weston, Inc. at 11 °C on February 02, 1996 under TLI project number 36049. Three more M23 samples were received on February 6, 1996 at 4°C. All samples were received in good condition and were stored in a refrigerator at 4°C. The samples and any associated QC samples were extracted and analyzed according to procedures described in the Triangle Laboratories' Data User's Manual (Rev. 12/92-HK-2-AH-2/93). Any particular difficulties encountered during the sample handling by Triangle Laboratories will be discussed in the QC Remarks section below. Results reported relate only to the items tested.

### Quality Control Samples

A laboratory method blank, identified as the TLI Blank, was prepared along with the samples.

### Quality Control Remarks

This release of this particular set of Roy F. Weston, Inc. analytical data by Triangle Laboratories was authorized by the Quality Control Chemist who has reviewed each sample data package individually following a series of inspections/reviews. When applicable, general deviations from acceptable QC requirements are identified below and comments are made on the effect of these deviations upon the validity and reliability of the results. Please consult Triangle Laboratories' Data User's Manual for further details. Specific QC issues associated with this particular project are:

**Sample Preparation Laboratory:** As per client's request, sample COE-HG-OUT-M23-SB was extracted and put on hold without having been analyzed until further notice.

**Mass Spectrometry:** The archived extract of sample COE-HG-AFTOUT-M23-R3 has been scheduled for fractionation due to very low internal standard recoveries upon initial analysis. The results of this sample will be forwarded as soon as they are available.

**Data Review:** None

**Other Comments:** Any analytes found in the TLI Blank are detected at a level equal to or less than the Target Detection Limit. This level of contamination is acceptable as per TLI guidelines. OCDD is not subject to blank contamination criteria as per TLI guidelines.

### *Sample Calculations:*

#### Analyte Concentration

The amount of any analyte is calculated using the following expression.

$$\text{Amt}_{(\sigma)} = \frac{A_{\sigma} * Q_{\beta}}{A_{\beta} * \text{RRF}_{(\sigma)} * W}$$

Where:

$\text{Amt}_{(\sigma)}$  is the amount of a given analyte,

$A_{\sigma}$  is the integrated current for the characteristic ions of the analyte,

$A_{\beta}$  is the integrated current of the characteristic ions of the corresponding internal standard,

$Q_{\beta}$  represents the amount of internal standard added to the sample before extraction,

$\text{RRF}_{(\sigma)}$  is the mean analyte relative response factor from the initial calibration (ICal) and,

$W$  is the sample weight or volume ( $W = 1$  for M23)

The amount is expressed in nanograms (ng) or picograms (pg).

#### Detection Limits

The detection limit reported for a target analyte that is not detected or presents an analyte response that is less than 2.5 times the background level is calculated by using the following expression. The area of the analyte is replaced by the noise level measured in a region of the chromatogram clear of genuine GC signals multiplied by an empirically determined factor. The detection limits represent the maximum possible concentration of a target analyte that could be present without being detected.

$$\text{DL}_{(\sigma)} = \frac{2 * 2.5 * (F * H) * Q_{\beta}}{A_{\beta} * \text{RRF}_{(\sigma)} * W}$$

Where:



$DL_{(c)}$  is the estimated detection limit for a target analyte,

2.5 is the minimum response required for a GC signal,

F is an empirical number that approximates the area to height ratio for a GC signal. This number is 5 for the DB-5 GC column and 3.5 for the DB-225 GC column,

H is the height of the noise

$A_{\beta}$  is the integrated current of the characteristic ions of the corresponding internal standard,

$Q_{\beta}$  represents the amount of internal standard added to the sample before extraction,

$RRF_{(c)}$  is the mean analyte relative response factor from the initial calibration (ICal) and,

W is the sample weight or volume

The detection limit is expressed in nanograms (ng) or picograms (pg).

Other sample calculations may be found in the Triangle Laboratories Data User's Manual.

### ***Data Flags***

In order to assist with data interpretation, data qualifier flags are used on the final reports, as discussed in Triangle Laboratories' Method 23 Data User's Manual. Please note that all data qualifier flags are subjective and are applied as consistently as possible. Each flag has been reviewed by two independent Chemists and the impact of the data qualifier flag on the quality of the data discussed above. The most commonly used flags are:

A 'B' flag is used to indicate that an analyte has been detected in the laboratory method blank as well as in an associated field sample. The 'B' flag will be used only when the concentration of analyte found in the sample is less than 20 times that found in the associated blank. This flag denotes possible contribution of background laboratory contamination to the concentration or amount of that analyte detected in the field sample. Under Triangle Laboratories guidelines, a laboratory blank is acceptable if the tetra-through hepta-CDD/CDF levels are all below the target detection limits (TDLS) or if the contamination levels are less than 5% of the levels detected in the associated field samples. If these conditions are satisfied or if the blank is unable to be reextracted, the interpretation of the contamination levels relative to the samples should be as follows: 1) analyte quantitations should be considered valid if the level of blank contamination is less than five percent of the level detected in the field sample, 2) analyte quantitations should be considered estimated if the analyte level in the sample is five to twenty times the level

of the analyte in the blank, or 3) analytes whose level in a sample is the same as or less than five times the level detected in the associated blank should be considered present likely due to laboratory contamination and not native to the sample.

An **'E'** flag is used to indicate that an PCDF peak has eluted at the sample time as the associated diphenyl ether (DPE) and that the DPE peak intensity is ten percent or more of the PCDF peak intensity. Total PCDF values are flagged 'E' if the total DPE contribution to the total PCDF value is greater than ten percent. All PCDF peaks that are significantly influenced by the presence of DPE peaks are quantitated with EMPC values, regardless of the isotopic abundance ratio. These EMPC values are most likely overestimated due to the DPE contribution to the peak area.

An **'I'** flag is used to indicate labeled standards have been interfered with on the GC column by coeluting, interferent peaks. The interference may have caused the standard's area to be overestimated. All quantitations relative to this standard, therefore, may be underestimated.

A **'PR'** flag is used to indicate that a GC peak is poorly resolved. This resolution problem may be seen as two closely eluting peaks without a reasonable valley between the peak tops, overly broad peaks, or peaks whose shapes vary greatly from a normal distribution. The concentrations or amounts reported for such peaks are most likely overestimated.

A **'Q'** flag is used to indicate the presence of QC ion instabilities caused by quantitative interferences. Affected analytes may be overestimated or underestimated as a result of this interference. A peak is flagged 'Q' only if it is affected by a QC ion deviation greater than 20% full scale as determined relative to the labeled standard against which it is quantitated. Total PCDF/PCDF quantitations will be flagged 'Q' if the interferences affect ten percent or more of the total PCDD/PCDF peak areas.

An **'RO'** flag is used to indicate that a labeled standard has an ion abundance ratio that is outside of the acceptable QC limits, most likely due to a coeluting interference. This may have caused the percent recovery of the standard to be overestimated. All quantitations versus this standard, therefore, may be underestimated.

A **'U'** flag is used to indicate that a specific (2,3,7,8-substituted)-isomer cannot be resolved from a large, coeluting interferent GC peak. The specific isomer is reported as not detected as a valid concentration/amount cannot be determined. The calculated detection limit, therefore, should be considered an underestimated value.

A **'V'** flag is used to indicate that, although the percent recovery of a labeled standard may be below a specific QC limit, the signal-to-noise ratio of the peak is greater than ten-to-one. The standard is considered reliably quantifiable. All quantitations derived from the standard are considered valid as well.

By our interpretation, the analytical data in this project are valid based on the guidelines of EPA Method 23 (6/93) and Triangle Laboratories' Method 23 Data User's Manual. Any specific QC concerns or problems have been discussed in the QC Remarks section of this case narrative with emphasis on their effect on the data. Should Roy F. Weston, Inc. have any questions or comments regarding this data package, please feel free to contact our Project Scientist Selena Armistead, at 919/544-5729 ext. 268.

For Triangle Laboratories, Inc.,

Report Preparation



Vijay S. Chhabra  
Report Preparation Chemist

Quality Control

S.A. Peris

Sari, A. Peris 02/21/96

Report Preparation Chemist

The total number of pages in the data package is : 174 .

**TRIANGLE LABS**

DOCUMENT  
CONTROL

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*Triangle Laboratories, Inc.*

801 Capitola Drive  
Durham, NC 27713-4411  
919-544-5729

P.O. Box 13485  
Research Triangle Park, NC 27709-3485  
Fax # 919-544-5491



## Custody Transfer Record/Lab Work Request

| Client                                               |              | Refrigerator # | Liquid | Solid | Volume | Preservatives | ANALYSES REQUESTED | Herb | PCB | ORGANIC | VOA | BNA | Metal | CN |
|------------------------------------------------------|--------------|----------------|--------|-------|--------|---------------|--------------------|------|-----|---------|-----|-----|-------|----|
| Est. Final Proj. Sampling Date                       | 10/12/2000   |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Work Order #                                         | 012-012-1300 |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Project Contact/Phone #                              | 304-610-7017 |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| AD Project Manager                                   | AT           |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| QC                                                   | Del          |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Date Rec'd                                           |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Account #                                            |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| MATRIX CODES:                                        |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| S - Soil                                             |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| SE - Sediment                                        |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| SO - Solid                                           |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| SL - Sludge                                          |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| W - Water                                            |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| O - Oil                                              |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| A - Air                                              |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| DB - Drum                                            |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| DL - Drum                                            |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| L - EPTCLP                                           |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| W - Wipe                                             |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| X - Other                                            |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| F - Fish                                             |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Lab ID                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Client ID/Description                                |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Matrix QC Chosen                                     |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| MS                                                   |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| MSD                                                  |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Date Collected                                       |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Time Collected                                       |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| DATE/REVISIONS:                                      |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 1.                                                   |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 2.                                                   |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 3.                                                   |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 4.                                                   |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 5.                                                   |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 6.                                                   |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS          |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Special Instructions:                                |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Relinquished by                                      |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Received by                                          |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Date                                                 |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Time                                                 |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Relinquished by                                      |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Received by                                          |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Date                                                 |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Time                                                 |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Discrepancies Between Samples Labels and COC Record? |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Y or N                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| NOTES:                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| WESTON Analytics Use Only                            |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Samples were:                                        |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 1) Shipped                                           |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Hand Delivered                                       |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Airbill #                                            |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 2) Ambient or Chilled                                |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Package                                              |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 3) Received in Good Condition                        |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Y or N                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 4) Labels Indicate Properly Preserved                |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Y or N                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 5) Received Within Holding Times                     |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Y or N                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| COC Record Present Upon Sample Rec'd                 |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Y or N                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| COC Tape was:                                        |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 1) Present on Outer Package                          |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Y or N                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 2) Unbroken on Outer Package                         |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Y or N                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 3) Present on Sample Condition                       |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Y or N                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 4) Unbroken on Sample Properly Preserved             |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| Y or N                                               |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |
| 381-596a                                             |              |                |        |       |        |               |                    |      |     |         |     |     |       |    |

# Custody Transfer Record/Lab Work Request

|                           |  |
|---------------------------|--|
| WESTON Analytics Use Only |  |
|---------------------------|--|

|                                |                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|
| Client                         | CDE HOT OATS                                                                                                                                                                                                                                                  |  |  |  |  |  |  |  |  |  |
| Est. Final Proj. Sampling Date | 02-28-012-012-1200                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  |
| Work Order #                   | 02281-012-012-1200                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |  |
| Project Contact/Phone #        | J. H. ONE/1160-701-7201                                                                                                                                                                                                                                       |  |  |  |  |  |  |  |  |  |
| All Project Manager            | Selena Armstrong                                                                                                                                                                                                                                              |  |  |  |  |  |  |  |  |  |
| OC: SVD                        | Del 500 TAT                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |
| Date Rec'd                     | Date Due                                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |  |  |
| Account #                      |                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |
| Refrigerator #                 |                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |
| #/Type Container               |                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |
| Volume                         |                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |
| Preservatives                  |                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |
| ANALYSES REQUESTED             | <div> <div>Liquid</div> <div>Solid</div> <div>Liquid</div> <div>Solid</div> </div> <div> <div>ORGANIC</div> <div>Herb</div> <div>Pest</div> <div>Pest</div> <div>BNA</div> <div>VOA</div> </div> <div> <div>INORG</div> <div>Metal</div> <div>CN</div> </div> |  |  |  |  |  |  |  |  |  |
| WESTON Analytix Use Only       |                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |  |

| Lab ID                 | Client ID/Description | Matrix |     | Date Collected | Time Collected | Exp Method | 23 (PCD/PCDF) | R3 | O2 | SITE | BANKS |
|------------------------|-----------------------|--------|-----|----------------|----------------|------------|---------------|----|----|------|-------|
|                        |                       | MS     | MSD |                |                |            |               |    |    |      |       |
| CE-H6-AFOUT-M23-R1-F15 |                       |        |     | 1/31/96        |                | X          |               |    |    |      |       |
| CE-H6-AFOUT-M23-R1-F1T |                       |        |     | 1/31/96        |                | X          |               |    |    |      |       |
| CE-H6-AFOUT-M23-R1-X4D |                       |        |     | 1/31/96        |                | X          |               |    |    |      |       |
| CE-H6-AFOUT-M23-R1-B15 |                       |        |     | 1/31/96        |                | X          |               |    |    |      |       |
| CE-H6-AFOUT-M23-R1-TOL |                       |        |     | 1/31/96        |                | X          |               |    |    |      |       |
| CE-H6-O1-M23-SB-A15    |                       |        |     | 1/31/96        |                | X          |               |    |    |      |       |
| CE-H6-O1-M23-SB-F1T    |                       |        |     | 1/31/96        |                | X          |               |    |    |      |       |
| CE-H6-O1-M23-SB-X4D    |                       |        |     | 1/31/96        |                | X          |               |    |    |      |       |
| CE-H6-O1-M23-SB-TOL    |                       |        |     | 1/31/96        |                | X          |               |    |    |      |       |

| FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS                                                                    |  |                             |  | DATE/REVISIONS:                                                                                                                            |  |                      |  | WESTON Analytica Use Only                                                                                                                                                                                                                                        |  |  |  |
|----------------------------------------------------------------------------------------------------------------|--|-----------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| <b>Special Instructions:</b><br>Analyze site blank<br>only if contamination<br>found in blank<br>train sample. |  |                             |  | 1. <u>Combine solvent</u><br>2. <u>wash other train</u><br>3. <u>facilities for</u><br>4. <u>total run compare</u><br>5. _____<br>6. _____ |  |                      |  | Samples were:<br>1) Shipped _____ or<br>Hand Delivered _____<br>Airbill # _____<br>2) Ambient or Chilled _____<br>3) Received in Good<br>Condition Y or N<br>4) Labels Indicate<br>Properly Preserved<br>Y or N<br>5) Received Within<br>Holding Times<br>Y or N |  |  |  |
| <b>Relinquished by</b><br>_____                                                                                |  | <b>Received by</b><br>_____ |  | <b>Date</b><br>_____                                                                                                                       |  | <b>Time</b><br>_____ |  | <b>Discrepancies Between<br/>           Samples Labels and<br/>           COC Record?</b> Y or N<br><b>NOTES:</b>                                                                                                                                                |  |  |  |
| <b>Relinquished by</b><br>_____                                                                                |  | <b>Received by</b><br>_____ |  | <b>Date</b><br>_____                                                                                                                       |  | <b>Time</b><br>_____ |  | <b>COC Record Present<br/>           Upon Sample Rec't</b><br>Y or N                                                                                                                                                                                             |  |  |  |
| <b>Relinquished by</b><br>_____                                                                                |  | <b>Received by</b><br>_____ |  | <b>Date</b><br>_____                                                                                                                       |  | <b>Time</b><br>_____ |  | <b>Cooler #</b><br>_____                                                                                                                                                                                                                                         |  |  |  |

|                            |                      |                            |                           |
|----------------------------|----------------------|----------------------------|---------------------------|
| Custody Seal : Absent      | Sample Seals: Absent | TLI Project Number : 36049 | Book                      |
| Chain of Custody : Present |                      | Client: RFW01              | 113                       |
| Sample Tags : Present      |                      | Rev F. Weston. Inc.        |                           |
| Sample Tag Numbers: Listed |                      | Date Received : 02/02/96   | By <i>J. S. West</i> Page |
| SNO Forms : N/A            |                      |                            |                           |

| Box                       | ICE       | Temp     | 11.0 C     | Carrier and Number | FedEx/2350390884 | 204       |
|---------------------------|-----------|----------|------------|--------------------|------------------|-----------|
| TLI Number                | Matrix    | To LAB   | To STORAGE | To LAB             | To STORAGE       | To LAB    |
| MR/H:CPM                  | Client ID | Location | Date/Init  | Date/Init          | Date/Init        | Date/Init |
| 113-204-1A                | FILTER    | 2/07/96  | Empty      |                    |                  |           |
| COE-HG-AFTOUT-M23-R1-FILT | CO1       | SBM      |            |                    |                  |           |
| 113-204-1B                | XAD       |          |            |                    |                  |           |
| COE-HG-AFTOUT-M23-R1-XAD  | CO1       |          |            |                    |                  |           |
| 113-204-1C                | FH/RINSE  |          |            |                    |                  |           |
| COE-HG-AFTOUT-M23-R1-FHS  | CO1       |          |            |                    |                  |           |
| 113-204-1D                | BH/RINSE  |          |            |                    |                  |           |
| COE-HG-AFTOUT-M23-R1-BHS  | CO1       |          |            |                    |                  |           |
| 113-204-1E                | TOLUENE   |          |            |                    |                  |           |
| COE-HG-AFTOUT-M23-R1-TOL  | CO1       |          |            |                    |                  |           |
| 113-204-2A                | FILTER    |          |            |                    |                  |           |
| COE-HG-OUT-M23-SB-FILT    | CO1       |          |            |                    |                  |           |
| 113-204-2B                | XAD       |          |            |                    |                  |           |
| COE-HG-OUT-M23-SB-XAD     | CO1       |          |            |                    |                  |           |
| 113-204-2C                | ACE/MECL2 |          |            |                    |                  |           |
| COE-HG-OUT-M23-SB-ACE/DCM | CO1       |          |            |                    |                  |           |
| 113-204-2D                | TOLUENE   |          |            |                    |                  |           |
| COE-HG-OUT-M23-SB-TOL     | CO1       |          |            |                    |                  |           |

Receiving Remarks: Samples received 2/2/96. logged in 2/4/96.

Archive Remarks:



|                               |                       |                            |                                |
|-------------------------------|-----------------------|----------------------------|--------------------------------|
| Custody Seal : Present/Intact | Sample Seals: Present | TLI Project Number : 36062 | Book : 113                     |
| Chain of Custody : Present    |                       | Client: RFW01              | Roy F. Weston, Inc.            |
| Sample Tags : Present         |                       | Date Received : 02/06/96   | By <i>[Signature]</i> Page 217 |
| Sample Tag Numbers: Listed    |                       |                            |                                |
| SNO Forms : N/A               |                       |                            |                                |

|           |     |            |                    |        |     |
|-----------|-----|------------|--------------------|--------|-----|
| Ice Chest | ICE | Temp 4.0 C | Carrier and Number | FedEx/ | 217 |
|-----------|-----|------------|--------------------|--------|-----|

| TLI Number            | Matrix    | To LAB   | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE |
|-----------------------|-----------|----------|------------|-----------|------------|-----------|------------|-----------|------------|
| MR/H:CPM              | Client ID | Location | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  |
| 113-217-1A            | FILTER    | 2107 kg  | EMPTY      |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       | sbm      |            |           |            |           |            |           |            |
| 113-217-1B            | XAD       |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-1C            | FH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-1D            | BH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-1E            | TOLUENE   |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2A            | FILTER    |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2B            | XAD       |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2C            | FH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2D            | BH/RINSE  |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |
| 113-217-2E            | TOLUENE   |          |            |           |            |           |            |           |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |          |            |           |            |           |            |           |            |

Receiving Remarks:

Archive Remarks:

|                               |                       |                            |                        |
|-------------------------------|-----------------------|----------------------------|------------------------|
| Custody Seal : Present/Intact | Sample Seals: Present | TLI Project Number : 36062 | Book : 113             |
| Chain of Custody : Present    |                       | Client: RFW01              | Roy F. Weston, Inc.    |
| Sample Tags : Present         |                       | Date Received : 02/06/96   | By: <i>[Signature]</i> |
| Sample Tag Numbers: Listed    |                       |                            | Page : 217             |
| SNO Forms : N/A               |                       |                            |                        |

|           |     |            |                    |        |     |
|-----------|-----|------------|--------------------|--------|-----|
| Ice Chest | ICE | Temp 4.0 C | Carrier and Number | FedEx/ | 217 |
|-----------|-----|------------|--------------------|--------|-----|

| TLI Number | Matrix    | To LAB    | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE |
|------------|-----------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| MR/H:CPM   | Client ID | Date/Init | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  |

|                       |          |         |       |  |  |  |  |  |  |
|-----------------------|----------|---------|-------|--|--|--|--|--|--|
| 113-217-3A            | FILTER   | 2/07/96 | EMPTY |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      | 26m     |       |  |  |  |  |  |  |
| 113-217-3B            | XAD      |         |       |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      |         |       |  |  |  |  |  |  |
| 113-217-3C            | FH/RINSE |         |       |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      |         |       |  |  |  |  |  |  |
| 113-217-3D            | BH/RINSE |         |       |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      |         |       |  |  |  |  |  |  |
| 113-217-3E            | TOLUENE  |         |       |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      |         |       |  |  |  |  |  |  |

Receiving Remarks:

Archive Remarks:

TRIANGLE LABORATORIES, INC.  
SAMPLE TRACKING AND PROJECT MANAGEMENT FORM

-----ADMINISTRATIVE INFORMATION-----

|                   |              |                        |
|-------------------|--------------|------------------------|
| TLI Proj#: 36062- | Samples: 5   | TurnAround.: 21 Day(s) |
| Prod Code: D23451 | Matrix.: M23 | Hold Time.: 0 Day(s)   |
| DetectLim: .05 ng | Type....: A  | Date Recvd.: 02/06/96  |
|                   |              | Date Due...: 02/27/96  |
|                   |              | DWL Due Dt.: 02/16/96  |

Analyte List.: Tetra-Octa PCDDs/PCDFs

Method.....: Method 23: T-O, Toluene Combined  
Client Proj...: COE Hot Gas Program  
Client.....: Roy F. Weston, Inc. (RFW01)  
P.O. No.....:  
Contact.....: Jeff O'Neill  
Proj. Mgr.....: Selena Armistead

Collect Dt/Tm: 02/02/96  
Phone.....: 610-701-7201  
Fax.....: 610-701-3187  
Sample Origin:

-----SPECIAL INSTRUCTIONS / QA REQUIREMENTS-----

Prep Project: 02518

Prespike Standard: USF-C and USF-S  
Prespike Amount...: 4.0ng

-----REPORTING REQUIREMENTS-----

Reporting Format: Report Option II

See MILES for Instructions/Communications.

Completed by:

Selena Armistead

DATE:

2/7/96

Reviewed by:

SA

DATE:

(PMGT0395)

② fire-spiked XAD clean

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96 TLI BLANK  
SPIKE Ong USF-C & USF-S  
SPIKER OME  
PREPARER G.L.  
WESTON

① XAD-clean, 11 Filter-cream 19/ASS wood-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R1-XAD  
Project: 36049  
113-204-1B

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R1-FILT  
Project: 36049  
113-204-1A

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE Ong USF-C & USF-S  
SPIKER OME  
PREPARER G.L.  
WESTON

Client

COE - HOT GAS

Plant

ALPINE, AL

Source

AFTERBURNER OUTLET

Sample No.

1

Date

3/14/96

Sample Method

METHOD 2

PCDF

Sample Type

② XAD-clean, 11 Filter-cream 19/ASS wood-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R2-  
Project: 36062  
113-217-1B

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R2-  
Project: 36062  
113-217-1A

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE Ong USF-C & USF-S  
SPIKER OME  
PREPARER G.L.  
WESTON

(3) XAD-clean, IF Her-clean, glasswool-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R3-  
Project: 36062  
113-217-2B

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-R5-  
Project: 36062  
113-217-2A

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE .Ong USF-C & USF-S  
SPIKER *CMR*  
PREPARER G.L.  
WESTON

(4) XAD-clean, Filter-clean, glasswool-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-BT-  
Project: 36062  
113-217-3B

RFW01-Roy F. Weston, Inc.  
COE-HG-AFTOUT-M23-BT-  
Project: 3606  
113-217-3H

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE .Ong USF-C & USF-S  
SPIKER *CMR*  
PREPARER G.L.  
WESTON

(5) IF Her-clean, XAD-clean, glasswool-clean

RFW01-Roy F. Weston, Inc.  
COE-HG-OUT-M23-SB-XAD  
Project: 36049  
113-204-2B

RFW01-Roy F. Weston, Inc.  
COE-HG-OUT-M23-SB-FILT  
Project: 36049  
113-204-2A

Triangle Laboratories, Inc.  
TLI PROJECT# 02518  
DATE 1/19/96  
SPIKE .Ong USF-C & USF-S  
SPIKER *CMR*  
PREPARER G.L.  
WESTON

XAD  
IF Her  
IF Her  
IF Her

ate: 02/10/96  
ime: 18.31

TRIANGLE LABORATORIES, INC.  
Wet Lab MM5/PUF Observations  
Project: 36062

PRDPERC v3.17  
Page: 1

| Sample<br># | cd           | TLI Number..         | Customer.Sample.Id..... | F. XAD<br>No | Color..... | Filter | Glass Wool PUF<br>Color..... | Odor..... | Q.No. Entered.By..... | Date.....     | Time..... | S |
|-------------|--------------|----------------------|-------------------------|--------------|------------|--------|------------------------------|-----------|-----------------------|---------------|-----------|---|
| 000         | TLI Blank    | TLI M23 Blank        |                         | 0            | clean      |        |                              |           | 02518 mercer          | 02/08 01:19 F |           |   |
| 001         | 113-204-1A-E | COE-HG-AFTOUT-M23-R1 |                         | 1            | clean      | cream  | clean                        |           | 02518 mercer          | 02/08 01:19 F |           |   |
| 002         | 113-217-1A-E | COE-HG-AFTOUT-M23-R2 |                         | 1            | clean      | cream  | clean                        |           | 02518 mercer          | 02/08 01:19 F |           |   |
| 003         | 113-217-2A-E | COE-HG-AFTOUT-M23-R3 |                         | 1            | clean      | cream  | clean                        |           | 02518 mercer          | 02/08 01:19 F |           |   |
| 004         | 113-217-3A-E | COE-HG-AFTOUT-M23-BT |                         | 1            | clean      | clean  | clean                        |           | 02518 mercer          | 02/08 01:19 F |           |   |
| 005         | 113-204-2A-D | COE-HG-OUT-M23-SB    |                         | 1            | clean      | clean  | clean                        |           | 02518 mercer          | 02/08 01:19 F |           |   |

\*\*\* End of Report \*\*\*

PCDD/PCDF/PBDD/PBDF Sample Preparation Tracking & Management Form

Project: 36062

Client: Roy F. Weston, Inc. (RFW01)

Sample Information:

Extraction Date: 2/07/96

Spiking Dates: 2/07/96 2/8/96 1/1 1/1 1/1

WL Spike: 40 µl, conc: 0.100 ng/µl

Method: Method 23: T-O, Toluene Combined

| S#.crd | TLI<br>SAMPLE<br>ID | CLIENT<br>SAMPLE ID  | GROSS<br>WEIGHT |       | SAMPLE<br>SIZE<br>g / ml | USF-I             | USF-A             | MISC              | USFMX             | Sample<br>Left ?<br>Yes/No |
|--------|---------------------|----------------------|-----------------|-------|--------------------------|-------------------|-------------------|-------------------|-------------------|----------------------------|
|        |                     |                      | Before          | After |                          | Ex/Cl<br>Initials | Ex/Cl<br>Initials | Ex/Cl<br>Initials | Extr.<br>Initials |                            |
| 000    | TLI Blank           | TLI M23 Blank        |                 |       | 1                        | <del>40 µl</del>  | <del>40 µl</del>  |                   |                   | K                          |
| 001    | 113-204-1A-E        | COE-HG-AFTOUT-M23-R1 |                 |       | 1                        | <del>40 µl</del>  | <del>40 µl</del>  |                   |                   | K                          |
| 002    | 113-217-1A-E        | COE-HG-AFTOUT-M23-R2 |                 |       | 1                        | <del>40 µl</del>  | <del>40 µl</del>  |                   |                   | Y                          |
| 003    | 113-217-2A-E        | COE-HG-AFTOUT-M23-R3 |                 |       | 1                        | <del>40 µl</del>  | <del>40 µl</del>  |                   |                   | K                          |
| 004    | 113-217-3A-E        | COE-HG-AFTOUT-M23-BT |                 |       | 1                        | <del>40 µl</del>  | <del>40 µl</del>  |                   |                   | K                          |
| 005    | 113-204-2A-D        | COE-HG-OUT-M23-SB    |                 |       | 1                        | <del>40 µl</del>  | <del>40 µl</del>  |                   |                   | Y                          |

Gross weight of sample container + sample before/after aliquot removal

005 Extract and HOLD

COMMENTS:

Indicate below the TLI Identification Number of the Sample Fortification Solutions:

USF-AIS: \_\_\_\_\_

USF-I: 33456 0.1 µg/ml USF-A: 3496A 0.1 µg/ml

USF-ACS: \_\_\_\_\_

USF-MX: \_\_\_\_\_

USF-C: \_\_\_\_\_

Other: \_\_\_\_\_

Initial/Date SBM 2/07/96

LOT # (Solvents): Toluene 950743

INITIALS OF BOTH THE SPIKER AND OBSERVER MUST BE ENTERED.  
(XXXXX = Gross Weight not provided for WATER Samples.)

for extraction: \_\_\_\_\_

TRIANGLE LABORATORIES, INC.  
 SAMPLE EXTRACTION and CLEANUP TRACKING FORM  
 TLI Project: 36062

| EXTRACTION                      |                            |               |                           | CHROMATOGRAPHIC CLEANUP |             |                         |                        |               |                  |               |                       |
|---------------------------------|----------------------------|---------------|---------------------------|-------------------------|-------------|-------------------------|------------------------|---------------|------------------|---------------|-----------------------|
| Ext S#.crd<br>and<br>TLI Number | Spike<br>before<br>Extr. ✓ | Extr. ✓       | Spike<br>after<br>Extr. ✓ | Acid<br>Base            | Big<br>Fish | Escltd<br>Silica<br>Gel | Acid<br>Almina<br>6 gm | Flor-<br>isil | Carbon<br>Column | Trans-<br>fer | Add'l<br>Clean-<br>up |
| 000<br>TLI Blank                | SDP<br>2/10/96             | SDM<br>2/6/96 | SDM<br>2/6/96             |                         |             |                         |                        |               |                  | 2/10/96       |                       |
| 001<br>113-204-1A-E             |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
| 002<br>113-217-1A-E             |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
| 003<br>113-217-2A-E             |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
| 004<br>113-217-3A-E             |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
| 005<br>113-204-2A-D             |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
|                                 |                            |               | 2/8/96                    |                         |             |                         |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                         |                        |               |                  |               |                       |

|                  |                   |              |             |              |
|------------------|-------------------|--------------|-------------|--------------|
| ...PROCEDURE.... | .....DETAILS..... | Performed By | Observed By | ....DATE.... |
| Spike            |                   | SDM          | SDP         | 2/07/96      |
| Soxhelet Ext.    |                   | SDM          |             | 2/07/96      |
| Rotovap          | 40mL, 10mL        | SDP          |             | 2/8/96       |
| Combine          |                   | N/A          |             | 2/8/96       |
| Divide           | 50:50             | SDP          |             | 2/8/96       |
| Solvent Exchange |                   |              |             | 2/8/96       |
| Add Tridecane    |                   |              |             | 2/8/96       |

Comments

Tridecane needs to be added after  
 extraction  
 \* Tridecane was added SDP

Rev 01/25/96 (PSTMF 4)



TRIANGLE LABORATORIES, INC.  
Transfer Chain-of-Custody Form  
Project 36062

Transfer From: DWLH5 To: DMS5

|              | Initials.. | Date.....      | Time...        |
|--------------|------------|----------------|----------------|
| Released by: | <u>JS</u>  | <u>2/10/96</u> | <u>7:00 PM</u> |
| Accepted by: | <u>BD</u>  | <u>2/11/96</u> | <u>04:25</u>   |

| MILES.ID..... | TLI_No.....  | Cust.Id.....         |
|---------------|--------------|----------------------|
| 36062- -000   | TLI Blank    | TLI M23 Blank        |
| 36062- -001   | 113-204-1A-E | COE-HG-AFTOUT-M23-R1 |
| 36062- -002   | 113-217-1A-E | COE-HG-AFTOUT-M23-R2 |
| 36062- -003   | 113-217-2A-E | COE-HG-AFTOUT-M23-R3 |
| 36062- -004   | 113-217-3A-E | COE-HG-AFTOUT-M23-BT |

-----XfrCOC (Rev 11/01/94)-----

Additional comments or instructions:

PROJECT: 36062

RS Conc  
20  $\mu$ l @ 0.1 NG/ $\mu$ l

Comments: \*Extract and Hold Samples 2/7/96

Type: A

**Spike File: SPX23704**

**Amt of Extract: 50%**

---REV 03/07/95 (PSTMF 6)---+

| MS# | COLUMN TYPE     | COLUMN # | PLOT NAME | PKD     | AMOUNT INJ | ACQUISITION | G/C  |
|-----|-----------------|----------|-----------|---------|------------|-------------|------|
| 708 | DRS 6041 0.25/μ | 5897824  | Q371TPK0  | M02/102 | 2.07       | EPUS2       | EPUS |

| DATE    | TIME  | PROJECT# | SAMPLE#   | NO | CLIENT SAMPLE ID | COMMENTS          | 332    | OP INIT | P | Q | SYR # | FILE #  |
|---------|-------|----------|-----------|----|------------------|-------------------|--------|---------|---|---|-------|---------|
| 2/16/94 | 15:55 |          |           |    | MASS CALIBRATE   |                   |        | VCA     |   |   |       | 8961022 |
| ↓       | 16:01 |          | 34970     | -  | RTCHK            |                   | 8%     | VUR     | ✓ |   | AUTO  | 8961023 |
| ↓       | 16:46 |          | 34908     | -  | 8290/M23         | 50 NG D Line      | 2.1 EG | JF      | ✓ |   | AUTO  | 5961024 |
| ↓       | 17:55 |          | 34908     | -  | 8290/M23         | 50 NG             | 2.5 EG | JF      | ✓ |   | AUTO  | 5961025 |
| ↓       | 19:00 |          | 34908     | -  | 8290/M23         | 50 NG             | 3.0 EG | JF      | ✓ |   | AUTO  | 5961026 |
| ↓       | 20:21 |          | 34908     | -  | 8290/M23         | 50 NG             | 2.8 EG | JF      | ✓ |   | AUTO  | 5961027 |
| ↓       | 21:23 |          | 34908     | -  | 8290/M23         | 50 NG             | 2.8 EG | JF      | ✓ |   | AUTO  | 5961028 |
| ↓       |       |          | 34999     | -  | RTCHK            |                   |        | JF      |   |   | AUTO  | 5961029 |
| 2/17/94 | 09:19 |          | 349073    | -  | 8290/M23         | Good (first time) | 1.3 EG | BD      | ✓ |   | AUTO  | 5961030 |
| ↓       | 10:27 |          | 34999     | -  | RTCHK            |                   | 10%    | BD      | ✓ |   | AUTO  | 5961031 |
| ↓       |       | 36120    | TLI Blank | 0  | TLI Blank        |                   |        |         |   |   | AUTO  | 5961032 |
| ↓       |       | 35482    | TLI Blank | 0  | TLI Blank        |                   |        |         |   |   | AUTO  | 5961033 |
| ↓       |       | 36062    | TLI Blank | 0  | TLI Blank        |                   |        |         |   |   | AUTO  | 5961034 |
| ↓       |       | 36120    | 114-25-   | 4  | 2-4-1123-FB      |                   |        |         |   |   | AUTO  | 5961035 |
| ↓       |       | 36120    | 114-25-   | 1  | 1-4-1123-F       |                   |        |         |   |   | AUTO  | 5961036 |

# TRIANGLE LABORATORIES INC RUN LOG

| MS#  | COLUMN TYPE          | COLUMN # | PLOT NAME | PKD | AMOUNT INJ  | ACQUISITION | G/C   |
|------|----------------------|----------|-----------|-----|-------------|-------------|-------|
| 7014 | DB-5 60-0.25 $\mu$ m | 5897824  | @TLI 1K5  | 702 | 2.0 $\mu$ l | ER442       | EP445 |

| DATE    | TIME  | PROJECT# | SAMPLE#           | NO  | CLIENT SAMPLE ID          | COMMENTS       | 332   | OP INIT | P | Q | SYR # | FILE #   |
|---------|-------|----------|-------------------|-----|---------------------------|----------------|-------|---------|---|---|-------|----------|
| 7/17/96 | 14:33 | ---      | 3370L             | 1   | R-100                     | (60 410-400)   | /     | BD      | / | / | AUTO  | \$961032 |
|         | 15:13 | 36120    | TLI BLANK         | 0   | TLI M23-23 Blank          | ALL M23        | 8.1E5 | BD      | / | / |       | \$961033 |
|         | 15:56 | 35982    | TLI BLANK         | 0   | TLI BLANK                 |                | 9.2E5 | BD      | / | / |       | \$961034 |
|         | 16:37 | 36082    | TLI BLANK         | 0   | TLI M23 BLANK             |                | 1.1E6 | BD      | / | / |       | \$961035 |
|         | 17:20 | 36120    | 114-25-4A-E       | 4   | 2-14-23-FB                |                | 8E5   | BD      | / | / |       | \$961036 |
|         | 18:01 | 36120    | 114-25-1A-E       | 1   | 1-14-23-1                 |                | 1.0E6 | BD      | / | / |       | \$961037 |
|         | 18:42 | 36120    | 114-25-2A-E       | 2   | 2-14-23-1                 |                | 1.1E6 | BD      | / | / |       | \$961038 |
|         | 19:20 | 36120    | 114-25-3A-E       | 3   | 2-14-23-3                 |                | 1.1E6 | BD      | / | / |       | \$961039 |
|         |       | 35982    | 113-207-113-137-1 | 1   | K2-DB-2A, K2-DB-2B        |                |       | BD      | / | / |       | \$961040 |
|         |       | 36120    | 113-207-113-137-2 | 2   | K2-DT-1A, K2-DT-1C        |                |       | BD      | / | / |       | \$961041 |
|         |       | 35982    | 113-207-113-137-3 | 3   | K2-DT-2A, K2-DT-2B        | Off the clock; |       | BD      | / | / |       | \$961042 |
|         |       | 35982    | 113-207-113-137-4 | 4   | K2-DB-1A, K2-DB-1B        | clock;         |       | BD      | / | / |       | \$961043 |
|         |       | 35982    | 113-207-113-137-5 | 5   | K2-DT-3A, K2-DT-3B        | TREESHOOT      |       | BD      | / | / |       | \$961044 |
|         |       | ---      | 3490B             | --- | M23/824C Concentrated T-0 |                | 3.1E6 | BD      | / | / |       | \$961045 |
|         |       | ---      | 3499D             | --- | Linear                    |                |       | Gm      |   |   |       | \$961046 |

3EES 2-17-10 KAS

|      |    |
|------|----|
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|------|----|

TRIANGLE LABORATORIES INC  
RUN LOG

| MS# | COLUMN TYPE    | COLUMN # | PLOT NAME | PKO  | AMOUNT INJ | ACQUISITION | G/C     |
|-----|----------------|----------|-----------|------|------------|-------------|---------|
| 704 | DB-5 60-0.25µm | 5897824  | @TJPKD    | T202 | 2.0 µL     | EPG.012     | EPG.014 |

| DATE    | TIME  | PROJECT# | SAMPLE#      | NO | CLIENT SAMPLE ID  | COMMENTS                 | 332       | OP INIT | P | Q | SYR # | FILE #  |
|---------|-------|----------|--------------|----|-------------------|--------------------------|-----------|---------|---|---|-------|---------|
| 2/18/96 | 08:45 | -        | 3490B        | -  | 8290/m23 concal   | NG: PCD F T.O.           | 2.9<br>EG | GM      | ✓ | ✓ | AUTO  | 4961047 |
| 2/18/96 | 20:32 | -        | 3499D        | -  | 8290/m23 concal   | Line - No injection this | 3.3<br>ES | JFK     | ✓ | ✓ | AUTO  | 4961048 |
| 2/18/96 | 21:16 | -        | 3490C        | -  | 8290/m23 concal   | Good. NG: PCD F T.O.     | 1.6<br>EG | JFK     | ✓ | ✓ | AUTO  | 4961050 |
| 2/18/96 | 22:31 | -        | 3490B        | -  | 8290/m23 concal   | Good. NG: PCD F T.O.     | 1.8<br>EG | JFK     | ✓ | ✓ | AUTO  | 4961051 |
| 2/19/96 | 08:50 | -        | 3490B        | -  | MASS CALIBRATE    | Good. NG: PCD F T.O.     | -         | VMT     | - | - | -     | 4961052 |
| 2/19/96 | 09:07 | -        | 3490B        | -  | 8290/m23 concal   | Good. NG: PCD F T.O.     | 1.8<br>EG | VMT     | ✓ | ✓ | AUTO  | 4961053 |
| 2/19/96 | 10:04 | -        | 3497D        | -  | RTCHK             | Good. NG: PCD F T.O.     | 1.0<br>EG | VMT     | ✓ | ✓ | AUTO  | 4961054 |
| 2/19/96 | 10:55 | 361      | 3370M        | -  | PS100             | Good. NG: PCD F T.O.     | 2.5<br>EG | VMT     | ✓ | ✓ | AUTO  | 4961055 |
| 2/19/96 | 11:36 | 36120    | 114-25-2A-E  | 2  | 2-3-m23-1         | -R1                      | 2.2<br>EG | VMT     | ✓ | ✓ | AUTO  | 4961056 |
| 2/19/96 | 12:17 | 36062    | 113-204-1A-E | 1  | COE-H6-AFTOUT-m23 | -R2                      | 2.6<br>EG | VMT     | ✓ | ✓ | AUTO  | 4961057 |
| 2/19/96 | 12:58 | 36062    | 113-217-1A-E | 2  | COE-H6-AFTOUT-m23 | -R3                      | 2.8<br>EG | VMT     | ✓ | ✓ | AUTO  | 4961058 |
| 2/19/96 | 13:38 | 36062    | 113-217-2A-E | 3  | COE-H6-AFTOUT-m23 | -R4                      | 2.5<br>EG | VMT     | ✓ | ✓ | AUTO  | 4961059 |
| 2/19/96 | 14:19 | 36062    | 113-217-3A-E | 4  | COE-H6-AFTOUT-m23 | -R5                      | 2.6<br>EG | VMT     | ✓ | ✓ | AUTO  | 4961060 |
| 2/19/96 | 15:42 | 35982    | RE ALMT      | 0  | TLC PLANK         | -                        | -         | VMT     | - | - | AUTO  | 4961061 |

|        |    |
|--------|----|
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|--------|----|

| DATE    | TIME  | PROJECT# | SAMPLE#      | NO | CLIENT SAMPLE ID      | COMMENTS | 332    | OP INIT | P | Q | SYR #  | FILE #  |
|---------|-------|----------|--------------|----|-----------------------|----------|--------|---------|---|---|--------|---------|
| 3/10/91 | 13:05 | 35980    | 113-175-1    | 2  | Composite V22 to V26  |          | 1.4 ET | GL      | ✓ |   | X2081  | X960504 |
| 3/12/91 | 09:02 | -        | 3499C        | -  | Radiol                |          | 2.18   | MM      | ✓ |   | Radiol | X960505 |
| ↓       | 10:11 | -        | 3494A        | -  | Tetra Concent 50      | Good     | 1.6 ET | MM      | ✓ |   | Tetra  | X960506 |
| ↓       | 11:23 | -        | 50703        | -  | RS-100                | Chrom    | 1.5 ET | MM      | ✓ |   | RS     | X960507 |
| ↓       | 12:16 | 36029A   | TL1 Blmb     | 0  | TL1 M33 Blmb          |          | 2.1 ET | MM      | ✓ |   | X2081  | X960508 |
| ↓       | 13:38 | ↓        | 113-234-1A-B | 1  | R-1                   |          | 3.3 ET | MM      | ✓ |   | X2081  | X960509 |
| ↓       | 14:26 | ↓        | 113-234-1A-B | 2  | R-2                   |          | 2.3 ET | MM      | ✓ |   | X2081  | X960510 |
| ↓       | 15:15 | 36062    | TL1 Blmb     | 0  | TL1 M23 Blmb          |          | 2.0 ET | MM      | ✓ |   | X2121  | X960511 |
| ↓       | 16:03 | ↓        | 113-204-1A-E | 1  | COE-146-AFTOUT-M23-R1 |          | 2.2 ET | MM      | ✓ |   | X2121  | X960512 |
| ↓       | 16:51 | 36062    | 113-217-1A-E | 2  | COE-116-AFTOUT-M23-E2 |          | 2.0    | BB      | ✓ |   | X2121  | X960513 |
| ↓       | 17:40 | 36062    | 113-217-1A-E | 3  | COE-116-AFTOUT-M23-E3 |          | 2.2    | BB      | ✓ |   | X2121  | X960514 |
| ↓       | 18:32 | 36062    | 113-217-1A-E | 4  | COE-116-AFTOUT-M23-E4 |          | 2.0    | BB      | ✓ |   | X2121  | X960515 |
| ↓       | 19:46 | 36092    | 113-247-1    | 1  | B-1                   |          | 1.8 ET | BB      | ✓ |   | X2121  | X960516 |
| ↓       | 20:38 | 36092    | 113-247-2    | 2  | B-2                   |          | 2.4 ET | BB      | ✓ |   | X2121  | X960517 |
| ↓       | 21:24 | 36092    | 113-247-3    | 3  | B-3                   |          | 2.4 ET | BB      | ✓ |   | X2121  | X960518 |

**TRIANGLE LABORATORIES OF RTP, INC.**

**SAMPLE  
DATA**

**PROPRIETARY INFORMATION**

TRIANGLE LABORATORIES, INC.  
Sample Result Summary for Project 36062  
Method 23X Full Screen Analyses (DB-5)

Page 1  
02/21/96

| Data File     | S961035       | S961057                  | S961058                  | S961060                  |
|---------------|---------------|--------------------------|--------------------------|--------------------------|
| Sample ID     | TLI M23 Blank | COE-HG-AFTOUT-M<br>23-R1 | COE-HG-AFTOUT-M<br>23-R2 | COE-HG-AFTOUT-M<br>23-BT |
| Units         | ng            | ng                       | ng                       | ng                       |
| Analytes      |               |                          |                          |                          |
| 2378-TCDD     | (0.03)        | 0.04                     | {0.02}                   | {0.006}                  |
| 12378-PeCDD   | (0.03)        | 0.16                     | 0.07                     | 0.02                     |
| 123478-HxCDD  | (0.04)        | 0.13                     | 0.06                     | (0.03)                   |
| 123678-HxCDD  | (0.03)        | 0.15                     | 0.05                     | (0.02)                   |
| 123789-HxCDD  | (0.03)        | 0.33                     | 0.11                     | (0.02)                   |
| 1234678-HpCDD | (0.03)        | 1.2                      | 0.34                     | 0.07                     |
| OCDD          | (0.04)        | 3.1                      | 1.1                      | {0.17}                   |
| 2378-TCDF     | (0.02)        | 0.04                     | 0.07                     | (0.009)                  |
| 12378-PeCDF   | (0.03)        | (0.02)                   | 0.01                     | (0.01)                   |
| 23478-PeCDF   | (0.03)        | (0.02)                   | 0.03                     | (0.01)                   |
| 123478-HxCDF  | (0.02)        | 0.02                     | 0.04                     | (0.02)                   |
| 123678-HxCDF  | (0.02)        | 0.01                     | 0.02                     | (0.01)                   |
| 234678-HxCDF  | (0.02)        | 0.02                     | 0.03                     | (0.02)                   |
| 123789-HxCDF  | (0.03)        | (0.01)                   | (0.02)                   | (0.02)                   |
| 1234678-HpCDF | (0.02)        | 0.05                     | 0.08                     | (0.02)                   |
| 1234789-HpCDF | (0.03)        | {0.01}                   | 0.01                     | (0.03)                   |
| OCDF          | (0.03)        | 0.08                     | 0.05                     | (0.04)                   |
| TOTAL TCDD    | (0.03)        | 0.84                     | 0.36                     | 0.02                     |
| TOTAL PeCDD   | (0.03)        | 1.9                      | 0.79                     | 0.03                     |
| TOTAL HxCDD   | (0.03)        | 2.6                      | 0.96                     | 0.14                     |
| TOTAL HpCDD   | (0.03)        | 2.8                      | 0.75                     | 0.07                     |
| TOTAL TCDF    | (0.02)        | 0.04                     | 0.14                     | (0.009)                  |
| TOTAL PeCDF   | (0.03)        | 0.13                     | 0.28                     | (0.01)                   |
| TOTAL HxCDF   | (0.02)        | 0.16                     | 0.20                     | (0.01)                   |
| TOTAL HpCDF   | (0.03)        | 0.13                     | 0.16                     | (0.02)                   |

Other Standards Percent Recovery Summary (% Rec)

|                 |      |      |      |      |
|-----------------|------|------|------|------|
| 37C1-TCDD       | 87.1 | 95.9 | 95.0 | 89.6 |
| 13C12-PeCDF 234 | 105  | 118  | 116  | 105  |
| 13C12-HxCDF 478 | 84.1 | 92.0 | 90.4 | 95.0 |
| 13C12-HxCDD 478 | 99.2 | 107  | 106  | 111  |
| 13C12-HpCDF 789 | 92.2 | 98.4 | 98.4 | 90.4 |

Other Standards Percent Recovery Summary (% Rec)

|                 |      |      |      |      |
|-----------------|------|------|------|------|
| 13C12-HxCDF 789 | 81.6 | 87.4 | 86.4 | 96.0 |
| 13C12-HxCDF 234 | 85.9 | 93.0 | 89.3 | 100  |

Internal Standards Percent Recovery Summary (% Rec)

|                 |      |      |      |      |
|-----------------|------|------|------|------|
| 13C12-2378-TCDF | 45.7 | 51.7 | 53.6 | 74.1 |
| 13C12-2378-TCDD | 53.4 | 57.6 | 59.5 | 82.4 |
| 13C12-PeCDF 123 | 55.3 | 55.7 | 58.2 | 74.2 |
| 13C12-PeCDD 123 | 77.7 | 72.0 | 76.8 | 92.5 |
| 13C12-HxCDF 678 | 70.0 | 72.8 | 71.3 | 89.4 |
| 13C12-HxCDD 678 | 82.1 | 82.7 | 79.8 | 98.0 |
| 13C12-HpCDF 678 | 72.5 | 73.9 | 72.2 | 69.1 |
| 13C12-HpCDD 678 | 102  | 95.9 | 94.7 | 84.4 |
| 13C12-OCDD      | 107  | 94.0 | 93.9 | 62.6 |

{Estimated Maximum Possible Concentration}, (Detection Limit).



TRIANGLE LABORATORIES, INC.  
Sample Result Summary for Project 36062  
Method 23X (DB-225)

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```
=====
Data File          X960512          X960513
Sample ID          COE-HG-AFTOUT-M  COE-HG-AFTOUT-M
                  23-R1            23-R2
Units              ng              ng
=====
```

```
Analytes
2378-TCDF          (0.007)          {0.01}
```

```
Internal Standards Percent Recovery Summary (% Rec)
13C12-2378-TCDF    44.5            56.5
=====
```

{Estimated Maximum Possible Concentration}, (Detection Limit).

# Roy F. Weston, Inc.

TLI Project: 36062  
Client Sample: TLI M23 Blank

Method 23 PCDD/PCDF Analysis (a)  
Analysis File: S961035

|                 |                     |                  |          |             |          |
|-----------------|---------------------|------------------|----------|-------------|----------|
| Client Project: | COE Hot Gas Program | Date Received:   | //       | Spike File: | SPX23704 |
| Sample Matrix:  | XAD                 | Date Extracted:  | 02/07/96 | ICal:       | SF51256  |
| TLI ID:         | TLI Blank           | Date Analyzed:   | 02/17/96 | ConCal:     | S961030  |
| Sample Size:    | 1.000               | Dilution Factor: | n/a      | % Moisture: | n/a      |
| Dry Weight:     | n/a                 | Blank File:      | S961035  | % Lipid:    | n/a      |
| GC Column:      | DB-5                | Analyst:         | BD       | % Solids:   | n/a      |

| Analytes             | Amt. (ng) | DL   | EMPC | Ratio | RT | Flags |
|----------------------|-----------|------|------|-------|----|-------|
| 2,3,7,8-TCDD         | ND        | 0.03 |      |       |    | —     |
| 1,2,3,7,8-PeCDD      | ND        | 0.03 |      |       |    | —     |
| 1,2,3,4,7,8-HxCDD    | ND        | 0.04 |      |       |    | —     |
| 1,2,3,6,7,8-HxCDD    | ND        | 0.03 |      |       |    | —     |
| 1,2,3,7,8,9-HxCDD    | ND        | 0.03 |      |       |    | —     |
| 1,2,3,4,6,7,8-HpCDD  | ND        | 0.03 |      |       |    | —     |
| 1,2,3,4,6,7,8,9-OCDD | ND        | 0.04 |      |       |    | —     |
| 2,3,7,8-TCDF         | ND        | 0.02 |      |       |    | —     |
| 1,2,3,7,8-PeCDF      | ND        | 0.03 |      |       |    | —     |
| 2,3,4,7,8-PeCDF      | ND        | 0.03 |      |       |    | —     |
| 1,2,3,4,7,8-HxCDF    | ND        | 0.02 |      |       |    | —     |
| 1,2,3,6,7,8-HxCDF    | ND        | 0.02 |      |       |    | —     |
| 2,3,4,6,7,8-HxCDF    | ND        | 0.02 |      |       |    | —     |
| 1,2,3,7,8,9-HxCDF    | ND        | 0.03 |      |       |    | —     |
| 1,2,3,4,6,7,8-HpCDF  | ND        | 0.02 |      |       |    | —     |
| 1,2,3,4,7,8,9-HpCDF  | ND        | 0.03 |      |       |    | —     |
| 1,2,3,4,6,7,8,9-OCDF | ND        | 0.03 |      |       |    | —     |

| Totals      | Amt. (ng) | Number | DL   | EMPC | Flags |
|-------------|-----------|--------|------|------|-------|
| Total TCDD  | ND        |        | 0.03 |      | —     |
| Total PeCDD | ND        |        | 0.03 |      | —     |
| Total HxCDD | ND        |        | 0.03 |      | —     |
| Total HpCDD | ND        |        | 0.03 |      | —     |
| Total TCDF  | ND        |        | 0.02 |      | —     |
| Total PeCDF | ND        |        | 0.03 |      | —     |
| Total HxCDF | ND        |        | 0.02 |      | —     |
| Total HpCDF | ND        |        | 0.03 |      | —     |

# Roy F. Weston, Inc.

Method 23 PCDD/PCDF Analysis (a)  
Analysis File: S961035

TLI Project: 36062  
Client Sample: TLI M23 Blank

| Internal Standards                                  | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|-----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
|                                                     | 1.8       | 45.7       | 40%-130%  | 0.78  | 21:20 | —     |
|                                                     |           |            |           | 0.79  | 22:06 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF         | 2.1       | 53.4       | 40%-130%  | 1.41  | 25:26 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDD         | 2.2       | 55.3       | 40%-130%  | 1.55  | 26:32 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDF      | 3.1       | 77.7       | 40%-130%  | 0.49  | 29:05 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDD      | 2.8       | 70.0       | 40%-130%  | 1.23  | 29:47 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDF    | 3.3       | 82.1       | 40%-130%  | 0.44  | 31:44 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDD    | 2.9       | 72.5       | 25%-130%  | 1.01  | 32:34 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDF  | 4.1       | 102        | 25%-130%  | 0.85  | 35:05 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDD  | 8.5       | 107        | 25%-130%  |       |       | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8,9-OCDD |           |            |           |       |       |       |

| Surrogate Standards (Type A)                       | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
|                                                    | 3.5       | 87.1       | 70%-140%  |       | 22:07 | —     |
|                                                    |           |            |           | 1.38  | 26:10 | —     |
| <sup>37</sup> Cl <sub>4</sub> -2,3,7,8-TCDD        | 4.2       | 105        | 70%-140%  | 0.48  | 28:59 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,7,8-PeCDF     | 3.4       | 84.1       | 70%-140%  | 1.20  | 29:42 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDF   | 4.0       | 99.2       | 70%-140%  | 0.46  | 32:55 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDD   | 3.7       | 92.2       | 70%-140%  |       |       | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8,9-HpCDF |           |            |           |       |       |       |

| Alternate Standards (Type A)                     | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|--------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
|                                                  | 3.3       | 81.6       | 40%-130%  | 0.49  | 30:17 | —     |
|                                                  | 3.4       | 85.9       | 40%-130%  | 0.49  | 29:34 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDF |           |            |           |       |       |       |
| <sup>13</sup> C <sub>12</sub> -2,3,4,6,7,8-HxCDF |           |            |           |       |       |       |

| Recovery Standards                               | Ratio | RT    | Flags |
|--------------------------------------------------|-------|-------|-------|
|                                                  | 0.82  | 21:53 | —     |
|                                                  | 1.21  | 30:04 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD      |       |       |       |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDD |       |       |       |

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X237\_PSR v1.14, LARS 6.03.09

# Roy F. Weston, Inc.

TLI Project: 36062

Method 23 PCDD/PCDF Analysis (a)

Client Sample: COE-HG-AFTOUT-M23-R1

Analysis File: S961057

Client Project: COE Hot Gas Program

Sample Matrix: M23

Date Received: 02/02/96

Spike File: SPX23704

TLI ID: 113-204-1A-E

Date Extracted: 02/07/96

ICal: SF51256

Date Analyzed: 02/19/96

ConCal: S961053

Sample Size: 1.000

Dilution Factor: n/a

% Moisture: n/a

Dry Weight: n/a

Blank File: S961035

% Lipid: n/a

GC Column: DB-5

Analyst: VCA

% Solids: n/a

| Analytes             | Amt. (ng) | DL   | EMPC | Ratio | RT    | Flags |
|----------------------|-----------|------|------|-------|-------|-------|
| 2,3,7,8-TCDD         | 0.04      |      |      | 0.76  | 22:08 | —     |
| 1,2,3,7,8-PeCDD      | 0.16      |      |      | 1.51  | 26:33 | —     |
| 1,2,3,4,7,8-HxCDD    | 0.13      |      |      | 1.34  | 29:43 | —     |
| 1,2,3,6,7,8-HxCDD    | 0.15      |      |      | 1.27  | 29:49 | —     |
| 1,2,3,7,8,9-HxCDD    | 0.33      |      |      | 1.28  | 30:04 | —     |
| 1,2,3,4,6,7,8-HpCDD  | 1.2       |      |      | 1.06  | 32:35 | —     |
| 1,2,3,4,6,7,8,9-OCDD | 3.1       |      |      | 0.85  | 35:06 | —     |
| 2,3,7,8-TCDF         | 0.04      |      |      | 0.81  | 21:23 | —     |
| 1,2,3,7,8-PeCDF      | ND        | 0.02 |      |       |       | —     |
| 2,3,4,7,8-PeCDF      | ND        | 0.02 |      |       |       | —     |
| 1,2,3,4,7,8-HxCDF    | 0.02      |      |      | 1.34  | 29:00 | —     |
| 1,2,3,6,7,8-HxCDF    | 0.01      |      |      | 1.26  | 29:06 | —     |
| 2,3,4,6,7,8-HxCDF    | 0.02      |      |      | 1.28  | 29:35 | —     |
| 1,2,3,7,8,9-HxCDF    | ND        | 0.01 |      |       |       | —     |
| 1,2,3,4,6,7,8-HpCDF  | 0.05      |      |      | 1.17  | 31:45 | —     |
| 1,2,3,4,7,8,9-HpCDF  | EMPC      |      | 0.01 |       |       | —     |
| 1,2,3,4,6,7,8,9-OCDF | 0.08      |      |      | 0.97  | 35:13 | —     |

| Totals      | Amt. (ng) | Number | DL | EMPC | Flags |
|-------------|-----------|--------|----|------|-------|
| Total TCDD  | 0.84      | 13     |    |      | —     |
| Total PeCDD | 1.9       | 11     |    | 1.9  | —     |
| Total HxCDD | 2.6       | 7      |    |      | —     |
| Total HpCDD | 2.8       | 2      |    |      | —     |
| Total TCDF  | 0.04      | 1      |    |      | —     |
| Total PeCDF | 0.13      | 4      |    |      | —     |
| Total HxCDF | 0.16      | 6      |    |      | —     |
| Total HpCDF | 0.13      | 2      |    | 0.14 | —     |

# Roy F. Weston, Inc.

TLI Project: 36062  
Client Sample: COE-HG-AFTOUT-M23-R1

Method 23 PCDD/PCDF Analysis (a)  
Analysis File: S961057

| Internal Standards                                  | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|-----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF         | 2.1       | 51.7       | 40%-130%  | 0.77  | 21:20 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDD         | 2.3       | 57.6       | 40%-130%  | 0.80  | 22:06 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDF      | 2.2       | 55.7       | 40%-130%  | 1.45  | 25:27 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDD      | 2.9       | 72.0       | 40%-130%  | 1.51  | 26:32 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDF    | 2.9       | 72.8       | 40%-130%  | 0.51  | 29:05 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDD    | 3.3       | 82.7       | 40%-130%  | 1.25  | 29:48 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDF  | 3.0       | 73.9       | 25%-130%  | 0.43  | 31:44 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDD  | 3.8       | 95.9       | 25%-130%  | 1.05  | 32:34 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8,9-OCDD | 7.5       | 94.0       | 25%-130%  | 0.85  | 35:06 | —     |

| Surrogate Standards (Type A)                       | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>37</sup> Cl <sub>4</sub> -2,3,7,8-TCDD        | 3.8       | 95.9       | 70%-140%  |       | 22:08 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,7,8-PeCDF     | 4.7       | 118        | 70%-140%  | 1.42  | 26:11 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDF   | 3.7       | 92.0       | 70%-140%  | 0.50  | 29:00 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDD   | 4.3       | 107        | 70%-140%  | 1.21  | 29:43 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8,9-HpCDF | 3.9       | 98.4       | 70%-140%  | 0.42  | 32:55 | —     |

| Alternate Standards (Type A)                     | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|--------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDF | 3.5       | 87.4       | 40%-130%  | 0.51  | 30:18 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,6,7,8-HxCDF | 3.7       | 93.0       | 40%-130%  | 0.50  | 29:35 | —     |

| Recovery Standards                               | Ratio | RT    | Flags |
|--------------------------------------------------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD      | 0.78  | 21:54 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDD | 1.23  | 30:05 | —     |

Data Reviewer: VC 02/21/96

**Roy F. Weston, Inc.**

TLI Project: 36062 Method 23 TCDD/TCDF Analysis (DB-225)  
 Client Sample: COE-HG-AFTOUT-M23-R1 Analysis File: X960512

|                 |                     |                 |          |
|-----------------|---------------------|-----------------|----------|
| Client Project: | COE Hot Gas Program |                 |          |
| Sample Matrix:  | M23                 | Date Received:  | 02/02/96 |
| TLI ID:         | 113-204-1A-E        | Date Extracted: | 02/07/96 |
|                 |                     | Date Analyzed:  | 02/12/96 |
|                 |                     | Spike File:     | SPC2NF04 |
|                 |                     | ICal:           | XF21266  |
|                 |                     | ConCal:         | X960506  |

|              |        |                  |         |             |     |
|--------------|--------|------------------|---------|-------------|-----|
| Sample Size: | 1.000  | Dilution Factor: | n/a     | % Moisture: | n/a |
| Dry Weight:  | n/a    | Blank File:      | S961035 | % Lipid:    | n/a |
| GC Column:   | DB-225 | Analyst:         | MM      | % Solids:   | n/a |

| Analytes     | Amt. (ng) | DL    | EMPC | Ratio | RT | Flags |
|--------------|-----------|-------|------|-------|----|-------|
| 2,3,7,8-TCDF | ND        | 0.007 |      |       |    | —     |

| Internal Standard                           | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|---------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF | 1.8       | 44.5       | 40%-130%  | 0.79  | 21:32 | —     |

| Recovery Standard                           | Ratio | RT    | Flags |
|---------------------------------------------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD | 0.81  | 20:32 | —     |

Data Reviewer: VC 02/21/96

Initial ....Date...

Data Review By:

Calculated Noise Area: 9.45

The Total Area for each peak with an ion abundance ratio outside  
ratio limits has been recalculated according to method requirements.

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Listing of X960512B.dbf  
Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID..

|         |       | 0.65-0.89 |      | 0.675-1.186 |       |       |       |
|---------|-------|-----------|------|-------------|-------|-------|-------|
| TCDF    |       |           |      |             |       |       |       |
| 304-306 | DC NL | 0:00 RO   | 0.90 | 3.16        |       | 0.000 |       |
|         | DC SN | 16:49 RO  | 1.73 | 2.94        |       | 0.781 |       |
|         | DC SN | 16:52 RO  | 0.32 | 1.47        |       | 0.783 |       |
|         | DC SN | 17:02 RO  | 0.55 | 3.00        |       | 0.791 |       |
|         | DC SN | 17:25 RO  | 0.48 | 2.58        |       | 0.809 |       |
|         | DC SN | 17:56 RO  | 0.21 | 0.91        |       | 0.833 |       |
|         | DC SN | 18:00 RO  | 1.65 | 2.00        |       | 0.836 |       |
|         |       | 18:10     | 0.80 | 41.95       | 18.58 | 23.37 | 0.844 |
|         | DC SN | 18:17     | 0.74 | 22.22       |       |       | 0.849 |
|         |       | 18:25 RO  | 0.62 | 41.41       | 18.05 | 29.02 | 0.855 |
|         | DC SN | 18:36     | 0.74 | 21.59       |       |       | 0.864 |
|         | DC SN | 18:44 RO  | 0.06 | 0.55        |       |       | 0.870 |
|         | DC SN | 18:52 RO  | 0.38 | 10.46       |       |       | 0.876 |
|         |       | 19:00     | 0.79 | 48.61       | 21.43 | 27.18 | 0.882 |
|         | DC SN | 19:08 RO  | 1.49 | 10.30       |       |       | 0.889 |
|         |       | 19:17     | 0.66 | 82.69       | 32.98 | 49.71 | 0.896 |
|         |       | 19:28 RO  | 0.98 | 41.26       | 22.86 | 23.29 | 0.904 |
|         | DC SN | 19:36     | 0.76 | 3.49        |       |       | 0.910 |
|         |       | 19:50     | 0.72 | 128.02      | 53.51 | 74.51 | 0.921 |
|         |       | 20:14     | 0.86 | 61.52       | 28.51 | 33.01 | 0.940 |
|         |       | 20:30 RO  | 0.63 | 43.53       | 18.99 | 30.00 | 0.952 |
|         | DC SN | 20:39     | 0.71 | 33.81       |       |       | 0.959 |
|         | DC SN | 20:54     | 0.81 | 8.48        |       |       | 0.971 |
|         | DC SN | 21:02 RO  | 0.48 | 23.95       |       |       | 0.977 |
|         | DC SN | 21:13 RO  | 0.42 | 3.96        |       |       | 0.985 |
|         | DC SN | 21:27 RO  | 0.61 | 20.16       |       |       | 0.996 |
|         | DC SN | 21:33 RO  | 0.51 | 26.10       |       |       | 1.001 |
|         | DC SN | 21:45     | 0.75 | 39.28       |       |       | 1.010 |
|         | DC SN | 22:01 RO  | 0.61 | 26.02       |       |       | 1.022 |
|         |       | 22:09     | 0.82 | 42.41       | 19.06 | 23.35 | 1.029 |
|         | DC SN | 22:24 RO  | 1.18 | 2.58        |       |       | 1.040 |
|         | DC SN | 22:31 RO  | 0.20 | 1.71        |       |       | 1.046 |
|         | DC SN | 22:54     | 0.69 | 21.58       |       |       | 1.063 |
|         | DC SN | 23:00 RO  | 0.39 | 2.92        |       |       | 1.068 |
|         | DC SN | 23:04 RO  | 1.13 | 2.83        |       |       | 1.071 |
|         | DC SN | 23:23 RO  | 0.99 | 1.56        |       |       | 1.086 |
|         | DC SN | 23:30 RO  | 0.23 | 1.38        |       |       | 1.091 |
|         | DC SN | 23:32 RO  | 0.19 | 3.04        |       |       | 1.093 |
|         | DC SN | 23:36 RO  | 0.63 | 2.27        |       |       | 1.096 |
|         | DC SN | 23:49 RO  | 1.12 | 0.87        |       |       | 1.106 |
| 304-306 |       | 9 Peaks   |      | 531.40      |       |       |       |

# Roy F. Weston, Inc.

TLI Project: 36062

Method 23 PCDD/PCDF Analysis (a)

Client Sample: COE-HG-AFTOUT-M23-R2

Analysis File: S961058

|                 |                     |                  |          |             |          |
|-----------------|---------------------|------------------|----------|-------------|----------|
| Client Project: | COE Hot Gas Program |                  |          | Spike File: | SPX23704 |
| Sample Matrix:  | M23                 | Date Received:   | 02/06/96 | ICal:       | SF51256  |
| TLI ID:         | 113-217-1A-E        | Date Extracted:  | 02/07/96 | ConCal:     | S961053  |
|                 |                     | Date Analyzed:   | 02/19/96 |             |          |
| Sample Size:    | 1.000               | Dilution Factor: | n/a      | % Moisture: | n/a      |
| Dry Weight:     | n/a                 | Blank File:      | S961035  | % Lipid:    | n/a      |
| GC Column:      | DB-5                | Analyst:         | VCA      | % Solids:   | n/a      |

| Analytes             | Amt. (ng) | DL   | EMPC | Ratio | RT    | Flags |
|----------------------|-----------|------|------|-------|-------|-------|
| 2,3,7,8-TCDD         | EMPC      |      | 0.02 |       |       | —     |
| 1,2,3,7,8-PeCDD      | 0.07      |      |      | 1.69  | 26:32 | —     |
| 1,2,3,4,7,8-HxCDD    | 0.06      |      |      | 1.06  | 29:42 | —     |
| 1,2,3,6,7,8-HxCDD    | 0.05      |      |      | 1.26  | 29:47 | —     |
| 1,2,3,7,8,9-HxCDD    | 0.11      |      |      | 1.29  | 30:04 | —     |
| 1,2,3,4,6,7,8-HpCDD  | 0.34      |      |      | 0.99  | 32:34 | —     |
| 1,2,3,4,6,7,8,9-OCDD | 1.1       |      |      | 0.87  | 35:05 | —     |
| 2,3,7,8-TCDF         | 0.07      |      |      | 0.87  | 21:21 | —     |
| 1,2,3,7,8-PeCDF      | 0.01      |      |      | 1.66  | 25:26 | —     |
| 2,3,4,7,8-PeCDF      | 0.03      |      |      | 1.53  | 26:11 | —     |
| 1,2,3,4,7,8-HxCDF    | 0.04      |      |      | 1.17  | 28:59 | —     |
| 1,2,3,6,7,8-HxCDF    | 0.02      |      |      | 1.13  | 29:05 | —     |
| 2,3,4,6,7,8-HxCDF    | 0.03      |      |      | 1.23  | 29:35 | —     |
| 1,2,3,7,8,9-HxCDF    | ND        | 0.02 |      |       |       | —     |
| 1,2,3,4,6,7,8-HpCDF  | 0.08      |      |      | 1.14  | 31:44 | —     |
| 1,2,3,4,7,8,9-HpCDF  | 0.01      |      |      | 1.07  | 32:55 | —     |
| 1,2,3,4,6,7,8,9-OCDF | 0.05      |      |      | 0.80  | 35:12 | —     |

| Totals      | Amt. (ng) | Number | DL | EMPC | Flags |
|-------------|-----------|--------|----|------|-------|
| Total TCDD  | 0.36      | 9      |    | 0.40 | —     |
| Total PeCDD | 0.79      | 8      |    | 0.91 | —     |
| Total HxCDD | 0.96      | 7      |    |      | —     |
| Total HpCDD | 0.75      | 2      |    |      | —     |
| Total TCDF  | 0.14      | 2      |    |      | —     |
| Total PeCDF | 0.28      | 9      |    | 0.29 | —     |
| Total HxCDF | 0.20      | 5      |    | 0.20 | —     |
| Total HpCDF | 0.16      | 4      |    |      | —     |



# Roy F. Weston, Inc.

TLI Project: 36062 Method 23 TCDD/TCDF Analysis (DB-225)  
 Client Sample: COE-HG-AFTOUT-M23-R2 Analysis File: X960513

|                 |                     |                  |          |             |          |
|-----------------|---------------------|------------------|----------|-------------|----------|
| Client Project: | COE Hot Gas Program |                  |          | Spike File: | SPC2NF04 |
| Sample Matrix:  | M23                 | Date Received:   | 02/06/96 | ICal:       | XF21266  |
| TLI ID:         | 113-217-1A-E        | Date Extracted:  | 02/07/96 | ConCal:     | X960506  |
|                 |                     | Date Analyzed:   | 02/12/96 |             |          |
| Sample Size:    | 1.000               | Dilution Factor: | n/a      | % Moisture: | n/a      |
| Dry Weight:     | n/a                 | Blank File:      | S961035  | % Lipid:    | n/a      |
| GC Column:      | DB-225              | Analyst:         | BB       | % Solids:   | n/a      |

| Analytes     | Amt. (ng) | DL | EMPC | Ratio | RT | Flags |
|--------------|-----------|----|------|-------|----|-------|
| 2,3,7,8-TCDF | EMPC      |    | 0.01 |       |    | —     |

| Internal Standard                           | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|---------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF | 2.3       | 56.5       | 40%-130%  | 0.80  | 21:32 | —     |

| Recovery Standard                           | Ratio | RT    | Flags |
|---------------------------------------------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD | 0.79  | 20:31 | —     |

Data Reviewer: VC 02/21/96

# Roy F. Weston, Inc.

TLI Project: 36062  
Client Sample: COE-HG-AFTOUT-M23-R2

Method 23 PCDD/PCDF Analysis (a)  
Analysis File: S961058

| Internal Standards                                  | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|-----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF         | 2.1       | 53.6       | 40%-130%  | 0.77  | 21:20 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDD         | 2.4       | 59.5       | 40%-130%  | 0.78  | 22:05 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDF      | 2.3       | 58.2       | 40%-130%  | 1.49  | 25:26 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDD      | 3.1       | 76.8       | 40%-130%  | 1.55  | 26:32 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDF    | 2.9       | 71.3       | 40%-130%  | 0.51  | 29:05 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDD    | 3.2       | 79.8       | 40%-130%  | 1.20  | 29:47 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDF  | 2.9       | 72.2       | 25%-130%  | 0.43  | 31:44 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDD  | 3.8       | 94.7       | 25%-130%  | 1.02  | 32:34 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8,9-OCDD | 7.5       | 93.9       | 25%-130%  | 0.86  | 35:05 | —     |

| Surrogate Standards (Type A)                       | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>37</sup> Cl-2,3,7,8-TCDD                      | 3.8       | 95.0       | 70%-140%  |       | 22:07 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,7,8-PeCDF     | 4.6       | 116        | 70%-140%  | 1.53  | 26:10 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDF   | 3.6       | 90.4       | 70%-140%  | 0.50  | 28:59 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDD   | 4.2       | 106        | 70%-140%  | 1.23  | 29:42 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8,9-HpCDF | 3.9       | 98.4       | 70%-140%  | 0.42  | 32:55 | —     |

| Alternate Standards (Type A)                     | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|--------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDF | 3.5       | 86.4       | 40%-130%  | 0.50  | 30:17 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,6,7,8-HxCDF | 3.6       | 89.3       | 40%-130%  | 0.51  | 29:34 | —     |

| Recovery Standards                               | Ratio | RT    | Flags |
|--------------------------------------------------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD      | 0.79  | 21:53 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDD | 1.21  | 30:04 | —     |

Data Reviewer: VC 02/21/96

# Roy E. Weston, Inc.

TLI Project: **36062**                      Method 23 PCDD/PCDF Analysis (a)  
 Client Sample: **COE-HG-AFTOUT-M23-BT**                      Analysis File: **S961060**

|                 |                            |                  |                 |             |                 |
|-----------------|----------------------------|------------------|-----------------|-------------|-----------------|
| Client Project: | <b>COE Hot Gas Program</b> |                  |                 | Spike File: | <b>SPX23704</b> |
| Sample Matrix:  | <b>M23</b>                 | Date Received:   | <b>02/06/96</b> | ICal:       | <b>SF51256</b>  |
| TLI ID:         | <b>113-217-3A-E</b>        | Date Extracted:  | <b>02/07/96</b> | ConCal:     | <b>S961053</b>  |
|                 |                            | Date Analyzed:   | <b>02/19/96</b> |             |                 |
| Sample Size:    | <b>1.000</b>               | Dilution Factor: | <b>n/a</b>      | % Moisture: | <b>n/a</b>      |
| Dry Weight:     | <b>n/a</b>                 | Blank File:      | <b>S961035</b>  | % Lipid:    | <b>n/a</b>      |
| GC Column:      | <b>DB-5</b>                | Analyst:         | <b>VCA</b>      | % Solids:   | <b>n/a</b>      |

| Analytes             | Amt. (ng) | DL    | EMPC  | Ratio | RT    | Flags |
|----------------------|-----------|-------|-------|-------|-------|-------|
| 2,3,7,8-TCDD         | EMPC      |       | 0.006 |       |       | —     |
| 1,2,3,7,8-PeCDD      | 0.02      |       |       | 1.73  | 26:35 | —     |
| 1,2,3,4,7,8-HxCDD    | ND        | 0.03  |       |       |       | —     |
| 1,2,3,6,7,8-HxCDD    | ND        | 0.02  |       |       |       | —     |
| 1,2,3,7,8,9-HxCDD    | ND        | 0.02  |       |       |       | —     |
| 1,2,3,4,6,7,8-HpCDD  | 0.07      |       |       | 1.06  | 32:37 | —     |
| 1,2,3,4,6,7,8,9-OCDD | EMPC      |       | 0.17  |       |       | —     |
| 2,3,7,8-TCDF         | ND        | 0.009 |       |       |       | —     |
| 1,2,3,7,8-PeCDF      | ND        | 0.01  |       |       |       | —     |
| 2,3,4,7,8-PeCDF      | ND        | 0.01  |       |       |       | —     |
| 1,2,3,4,7,8-HxCDF    | ND        | 0.02  |       |       |       | —     |
| 1,2,3,6,7,8-HxCDF    | ND        | 0.01  |       |       |       | —     |
| 2,3,4,6,7,8-HxCDF    | ND        | 0.02  |       |       |       | —     |
| 1,2,3,7,8,9-HxCDF    | ND        | 0.02  |       |       |       | —     |
| 1,2,3,4,6,7,8-HpCDF  | ND        | 0.02  |       |       |       | —     |
| 1,2,3,4,7,8,9-HpCDF  | ND        | 0.03  |       |       |       | —     |
| 1,2,3,4,6,7,8,9-OCDF | ND        | 0.04  |       |       |       | —     |

| Totals      | Amt. (ng) | Number | DL    | EMPC | Flags |
|-------------|-----------|--------|-------|------|-------|
| Total TCDD  | 0.02      | 1      |       | 0.02 | —     |
| Total PeCDD | 0.03      | 2      |       | 0.09 | —     |
| Total HxCDD | 0.14      | 3      |       |      | —     |
| Total HpCDD | 0.07      | 1      |       | 0.15 | —     |
| Total TCDF  | ND        |        | 0.009 |      | —     |
| Total PeCDF | ND        |        | 0.01  |      | —     |
| Total HxCDF | ND        |        | 0.01  |      | —     |
| Total HpCDF | ND        |        | 0.02  |      | —     |

# Roy F. Weston, Inc.

TLI Project: 36062  
Client Sample: COE-HG-AFTOUT-M23-BT

Method 23 PCDD/PCDF Analysis (a)  
Analysis File: S961060

| Internal Standards                                  | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|-----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF         | 3.0       | 74.1       | 40%-130%  | 0.77  | 21:23 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDD         | 3.3       | 82.4       | 40%-130%  | 0.79  | 22:08 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDF      | 3.0       | 74.2       | 40%-130%  | 1.47  | 25:30 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDD      | 3.7       | 92.5       | 40%-130%  | 1.54  | 26:34 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDF    | 3.6       | 89.4       | 40%-130%  | 0.51  | 29:07 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDD    | 3.9       | 98.0       | 40%-130%  | 1.22  | 29:49 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDF  | 2.8       | 69.1       | 25%-130%  | 0.43  | 31:47 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDD  | 3.4       | 84.4       | 25%-130%  | 1.01  | 32:37 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8,9-OCDD | 5.0       | 62.6       | 25%-130%  | 0.86  | 35:08 | —     |

| Surrogate Standards (Type A)                       | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>37</sup> Cl <sub>4</sub> -2,3,7,8-TCDD        | 3.6       | 89.6       | 70%-140%  |       | 22:10 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,7,8-PeCDF     | 4.2       | 105        | 70%-140%  | 1.49  | 26:13 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDF   | 3.8       | 95.0       | 70%-140%  | 0.52  | 29:02 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDD   | 4.4       | 111        | 70%-140%  | 1.21  | 29:45 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8,9-HpCDF | 3.6       | 90.4       | 70%-140%  | 0.42  | 32:57 | —     |

| Alternate Standards (Type A)                     | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|--------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDF | 3.8       | 96.0       | 40%-130%  | 0.51  | 30:20 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,6,7,8-HxCDF | 4.0       | 100        | 40%-130%  | 0.50  | 29:37 | —     |

| Recovery Standards                               | Ratio | RT    | Flags |
|--------------------------------------------------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD      | 0.81  | 21:57 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDD | 1.20  | 30:06 | —     |

Data Reviewer: VC 02/21/96

**CASE NARRATIVE**

**Analysis of Samples for the Presence of  
Polychlorinated Dibenzo-*p*-Dioxins and Dibenzofurans by  
High-Resolution Chromatography / High-Resolution Mass Spectrometry**

**Method 23 (6/93)**

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|                            |                     |
|----------------------------|---------------------|
| <b>Date:</b>               | March 4, 1996       |
| <b>Client ID:</b>          | Roy F. Weston, Inc. |
| <b>P.O. Number:</b>        |                     |
| <b>TLI Project Number:</b> | 36062r1             |

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Rev. 06/02/95

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### Overview

Two M23 samples were received from Roy F. Weston, Inc. on February 02, 1996 at 11 °C under TLI project number 36049. Three more M23 samples were received on February 06, 1996 at 4°C. All samples were received in good condition and were stored in a refrigerator at 4°C until the time of extraction. The archived portion of sample COE-HG-AFTOUT-M23-R3 was fractionated due to poor internal standard recoveries in the initial analysis of the sample. Only results for this sample are included in this data package.

The sample and associated QC sample were extracted and analyzed according to procedures described in the Triangle Laboratories' Data User's Manual (Rev. 12/92-HK-2-AH-2/93). Any particular difficulties encountered during the samples' handling by Triangle Laboratories will be discussed in the QC Remarks section below. Results reported relate only to the items tested.

### Quality Control Samples

A laboratory method blank, identified as the TLI M23 Blank, was prepared along with the samples.

### Quality Control Remarks

This release of this particular set of Roy F. Weston, Inc. analytical data by Triangle Laboratories was authorized by the Quality Control Chemist who has reviewed each sample data package individually following a series of inspections/reviews. When applicable, general deviations from acceptable QC requirements are identified below and comments are made on the effect of these deviations upon the validity and reliability of the results. Please consult Triangle Laboratories' Data User's Manual for further details. Specific QC issues associated with this particular project are:

***Sample Preparation Laboratory:*** None

***Mass Spectrometry:*** None

***Data Review:*** None

***Other Comments:*** Any analytes found in the TLI M23 Blank are detected at a level equal to or less than the Target Detection Limit. This level of contamination is acceptable as per TLI guidelines. OCDD is not subject to blank contamination criteria as per TLI guidelines.

### *Sample Calculations:*

#### Analyte Concentration

The amount of any analyte is calculated using the following expression.

$$\text{Amt}_{(\sigma)} = \frac{A_{\sigma} * Q_{\beta}}{A_{\beta} * \text{RRF}_{(\sigma)} * W}$$

Where:

$\text{Amt}_{(\sigma)}$  is the amount of a given analyte,

$A_{\sigma}$  is the integrated current for the characteristic ions of the analyte,

$A_{\beta}$  is the integrated current of the characteristic ions of the corresponding internal standard,

$Q_{\beta}$  represents the amount of internal standard added to the sample before extraction,

$\text{RRF}_{(\sigma)}$  is the mean analyte relative response factor from the initial calibration (ICal) and,

$W$  is the sample weight or volume ( $W = 1$  for M23)

The amount is expressed in nanograms (ng) or picograms (pg).

#### Detection Limits

The detection limit reported for a target analyte that is not detected or presents an analyte response that is less than 2.5 times the background level is calculated by using the following expression. The area of the analyte is replaced by the noise level measured in a region of the chromatogram clear of genuine GC signals multiplied by an empirically determined factor. The detection limits represent the maximum possible concentration of a target analyte that could be present without being detected.

$$\text{DL}_{(\sigma)} = \frac{2 * 2.5 * (F * H) * Q_{\beta}}{A_{\beta} * \text{RRF}_{(\sigma)} * W}$$

Where:

$\text{DL}_{(\sigma)}$  is the estimated detection limit for a target analyte,

2.5 is the minimum response required for a GC signal,

F is an empirical number that approximates the area to height ratio for a GC signal. This number is 5 for the DB-5 GC column and 3.5 for the DB-225 GC column,

H is the height of the noise

$A_{\beta}$  is the integrated current of the characteristic ions of the corresponding internal standard,

$Q_{\beta}$  represents the amount of internal standard added to the sample before extraction,

$RRF_{(s)}$  is the mean analyte relative response factor from the initial calibration (ICal) and,

W is the sample weight or volume

The detection limit is expressed in nanograms (ng) or picograms (pg).

Other sample calculations may be found in the Triangle Laboratories Data User's Manual.

### ***Data Flags***

In order to assist with data interpretation, data qualifier flags are used on the final reports, as discussed in Triangle Laboratories' Method 23 Data User's Manual. Please note that all data qualifier flags are subjective and are applied as consistently as possible. Each flag has been reviewed by two independent Chemists and the impact of the data qualifier flag on the quality of the data discussed above. The most commonly used flags are:

A 'B' flag is used to indicate that an analyte has been detected in the laboratory method blank as well as in an associated field sample. The 'B' flag will be used only when the concentration of analyte found in the sample is less than 20 times that found in the associated blank. This flag denotes possible contribution of background laboratory contamination to the concentration or amount of that analyte detected in the field sample. Under Triangle Laboratories guidelines, a laboratory blank is acceptable if the tetra-through hepta-CDD/CDF levels are all below the target detection limits (TDLS) or if the contamination levels are less than 5% of the levels detected in the associated field samples. If these conditions are satisfied or if the blank is unable to be reextracted, the interpretation of the contamination levels relative to the samples should be as follows: 1) analyte quantitations should be considered valid if the level of blank contamination is less than five percent of the level detected in the field sample, 2) analyte quantitations should be considered estimated if the analyte level in the sample is five to twenty times the level of the analyte in the blank, or 3) analytes whose level in a sample is the same as or less



than five times the level detected in the associated blank should be considered present likely due to laboratory contamination and not native to the sample.

An 'E' flag is used to indicate that an PCDF peak has eluted at the sample time as the associated diphenyl ether (DPE) and that the DPE peak intensity is ten percent or more of the PCDF peak intensity. Total PCDF values are flagged 'E' if the total DPE contribution to the total PCDF value is greater than ten percent. All PCDF peaks that are significantly influenced by the presence of DPE peaks are quantitated with EMPC values, regardless of the isotopic abundance ratio. These EMPC values are most likely overestimated due to the DPE contribution to the peak area.

An 'I' flag is used to indicate labeled standards have been interfered with on the GC column by coeluting, interferent peaks. The interference may have caused the standard's area to be overestimated. All quantitations relative to this standard, therefore, may be underestimated.

A 'PR' flag is used to indicate that a GC peak is poorly resolved. This resolution problem may be seen as two closely eluting peaks without a reasonable valley between the peak tops, overly broad peaks, or peaks whose shapes vary greatly from a normal distribution. The concentrations or amounts reported for such peaks are most likely overestimated.

A 'Q' flag is used to indicate the presence of QC ion instabilities caused by quantitative interferences. Affected analytes may be overestimated or underestimated as a result of this interference. A peak is flagged 'Q' only if it is affected by a QC ion deviation greater than 20% full scale as determined relative to the labeled standard against which it is quantitated. Total PCDF/PCDF quantitations will be flagged 'Q' if the interferences affect ten percent or more of the total PCDD/PCDF peak areas.

An 'RO' flag is used to indicate that a labeled standard has an ion abundance ratio that is outside of the acceptable QC limits, most likely due to a coeluting interference. This may have caused the percent recovery of the standard to be overestimated. All quantitations versus this standard, therefore, may be underestimated.

A 'U' flag is used to indicate that a specific (2,3,7,8-substituted) isomer cannot be resolved from a large, coeluting interferent GC peak. The specific isomer is reported as not detected as a valid concentration/amount cannot be determined. The calculated detection limit, therefore, should be considered an underestimated value.

A 'V' flag is used to indicate that, although the percent recovery of a labeled standard may be below a specific QC limit, the signal-to-noise ratio of the peak is greater than ten-to-one. The standard is considered reliably quantifiable. All quantitations derived from the standard are considered valid as well.

By our interpretation, the analytical data in this project are valid based on the guidelines of EPA Method 23 (6/93) and Triangle Laboratories' Method 23 Data User's Manual. Any specific QC concerns or problems have been discussed in the QC Remarks section of this case narrative with emphasis on their effect on the data. Should Roy F. Weston, Inc. have any questions or comments regarding this data package, please feel free to contact our Project Scientist, Selena Armistead, at 919/544-5729 ext. 268.

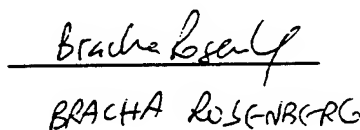
For Triangle Laboratories, Inc.,

Report Preparation



Sheila A. Lee-Lewis  
Report Preparation Chemist

Quality Control

  
BRACHA ROSENBERG

3.5.96

Report Preparation Chemist

The total number of pages in the data package is : 102 .

**TRIANGLE LABS**

DOCUMENT  
CONTROL

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*Triangle Laboratories, Inc.*  
801 Capitola Drive  
Durham, NC 27713-4411  
919-544-5729

P.O. Box 13485  
Research Triangle Park, NC 27709-3485  
Fax # 919-544-5491

**WESTON Analytics Use Only**

RFW 21-21-001/A-7/91

|                               |                       |                            |                                |
|-------------------------------|-----------------------|----------------------------|--------------------------------|
| Custody Seal : Present/Intact | Sample Seals: Present | TLI Project Number : 36062 | Book : 113                     |
| Chain of Custody : Present    |                       | Client: RFW01              | Roy F. Weston, Inc.            |
| Sample Tags : Present         |                       | Date Received : 02/06/96   | By <i>[Signature]</i> Page 217 |
| Sample Tag Numbers: Listed    |                       |                            |                                |
| SMO Forms : N/A               |                       |                            |                                |

| Ice Chest             | ICE       | Temp      | 4.0 C      | Carrier and Number | FedEx/     |
|-----------------------|-----------|-----------|------------|--------------------|------------|
| TLI Number            | Matrix    | To LAB    | To STORAGE | To LAB             | To STORAGE |
| MR/H:CPM              | Client ID | Date/Init | Date/Init  | Date/Init          | Date/Init  |
| 113-217-1A            | FILTER    | 2/07/96   | Empty      |                    |            |
| COE-HG-AFTOUT-M23-R2- | CO1       | stn       |            |                    |            |
| 113-217-1B            | XAD       |           |            |                    |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |           |            |                    |            |
| 113-217-1C            | FH/RINSE  |           |            |                    |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |           |            |                    |            |
| 113-217-1D            | BH/RINSE  |           |            |                    |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |           |            |                    |            |
| 113-217-1E            | TOLUENE   |           |            |                    |            |
| COE-HG-AFTOUT-M23-R2- | CO1       |           |            |                    |            |
| 113-217-2A            | FILTER    |           |            |                    |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |           |            |                    |            |
| 113-217-2B            | XAD       |           |            |                    |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |           |            |                    |            |
| 113-217-2C            | FH/RINSE  |           |            |                    |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |           |            |                    |            |
| 113-217-2D            | BH/RINSE  |           |            |                    |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |           |            |                    |            |
| 113-217-2E            | TOLUENE   |           |            |                    |            |
| COE-HG-AFTOUT-M23-R3- | CO1       |           |            |                    |            |

Receiving Remarks:

Archive Remarks:

|                               |                       |                            |                        |
|-------------------------------|-----------------------|----------------------------|------------------------|
| Custody Seal : Present/Intact | Sample Seals: Present | TLI Project Number : 36062 | Book : 113             |
| Chain of Custody : Present    |                       | Client: RFW01              | Roy F. Weston, Inc.    |
| Sample Tags : Present         |                       | Date Received : 02/06/96   | By: <i>[Signature]</i> |
| Sample Tag Numbers: Listed    |                       |                            | Page : 217             |
| SNO Forms : N/A               |                       |                            |                        |

|           |     |            |                    |        |     |
|-----------|-----|------------|--------------------|--------|-----|
| Ice Chest | ICE | Temp 4.0 C | Carrier and Number | FedEx/ | 217 |
|-----------|-----|------------|--------------------|--------|-----|

| TLI Number | Matrix    | To LAB   | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE | To LAB    | To STORAGE |
|------------|-----------|----------|------------|-----------|------------|-----------|------------|-----------|------------|
| MR/H:CPH   | Client ID | Location | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  | Date/Init | Date/Init  |

|                       |          |        |       |  |  |  |  |  |  |
|-----------------------|----------|--------|-------|--|--|--|--|--|--|
| 113-217-3A            | FILTER   | 2/6/96 | EMPTY |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      | 36m    |       |  |  |  |  |  |  |
| 113-217-3B            | XAD      |        |       |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      |        |       |  |  |  |  |  |  |
| 113-217-3C            | FH/RINSE |        |       |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      |        |       |  |  |  |  |  |  |
| 113-217-3D            | BH/RINSE |        |       |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      |        |       |  |  |  |  |  |  |
| 113-217-3E            | TOLUENE  |        |       |  |  |  |  |  |  |
| COE-HG-AFTOUT-M23-BT- | CO1      |        |       |  |  |  |  |  |  |

Receiving Remarks:

Archive Remarks:

TRIANGLE LABORATORIES, INC.  
SAMPLE TRACKING AND PROJECT MANAGEMENT FORM

-----ADMINISTRATIVE INFORMATION-----

|                     |              |                        |
|---------------------|--------------|------------------------|
| TLI Proj#: 36062-r1 | Samples: 2   | TurnAround.: 21 Day(s) |
| Prod Code: D23451   | Matrix.: M23 | Hold Time...: 0 Day(s) |
| DetectLim: .05 ng   | Type...: A   | Date Recvd.: 02/06/96  |
|                     |              | Date Due...: 02/27/96  |
|                     |              | DWL Due Dt.: 02/16/96  |

Analyte List.: Tetra-Octa PCDDs/PCDFs

|                                               |                          |
|-----------------------------------------------|--------------------------|
| Method.....: Method 23: T-O, Toluene Combined |                          |
| Client Proj...: COE Hot Gas Program           |                          |
| Client.....: Roy F. Weston, Inc. (RFW01)      |                          |
| P.O. No.....:                                 | Collect Dt/Tm: 02/02/96  |
| Contact.....: Jeff O'Neill                    | Phone.....: 610-701-7201 |
| Proj. Mgr.....: Selena Armistead              | Fax.....: 610-701-3187   |
|                                               | Sample Origin:           |

-----SPECIAL INSTRUCTIONS / QA REQUIREMENTS-----

|                     |                                    |
|---------------------|------------------------------------|
| Prep Project: 02518 | Prespike Standard: USF-C and USF-S |
|                     | Prespike Amount...: 4.0ng          |

-----REPORTING REQUIREMENTS-----

Reporting Format: Report Option II

See MILES for Instructions/Communications.

|                                       |                        |
|---------------------------------------|------------------------|
| Completed by: <u>Selena Armistead</u> | DATE: <u>2/20/96</u>   |
| Reviewed by: <u>SA</u>                | DATE: _____ (PMGT0395) |

Date: 02/20/96  
Time: 17:43

TRIANGLE LABORATORIES, INC.  
Project: 36062  
Entries made on or before 02/20/96

PRDLLST v1.04  
Page: 1

\*\*\*\* Log: C \*\*\* Desc: Cleanup archived portion \*\*\* Ext:[ ]  
\*\*\*\* By: Armistead on 02/20/96 at 17:43:15

Sample 113-217-2A-E has extremely poor internal standard recoveries which are not meeting 10:1 signal to noise criteria. Please take the archived portion of the sample and subject it to cleanup procedures and analysis.

Email sent to: Ragsdale



TRIANGLE LABORATORIES, INC.

PAGE 1 OF 1

PCDD/PCDF/PBDD/PBDF Sample Preparation Tracking & Management Form

Client: Roy F. Weston, Inc. (RFW01)

Project: 36062

Sample Information:

Extraction Date: 2/07/96

Spiking Dates: 2/07/96 2/8/96 1/1 1/1 1/1

WL Spike: 40 µl, conc: 0.100 ng/µl

Method: Method 23: T-O, Toluene Combined

| S#  | TLI<br>SAMPLE<br>ID | CLIENT<br>SAMPLE ID  | GROSS<br>WEIGHT |       | SAMPLE<br>SIZE<br>g / ml | USF-I             | USF-A             | MISC              | USFMX             | Sample<br>Left ?<br>Yes/No |
|-----|---------------------|----------------------|-----------------|-------|--------------------------|-------------------|-------------------|-------------------|-------------------|----------------------------|
|     |                     |                      | Before          | After |                          | Ex/Cl<br>Initials | Ex/Cl<br>Initials | Ex/Cl<br>Initials | Extr.<br>Initials |                            |
| 000 | TLI Blank           | TLI M23 Blank        |                 |       |                          | <del>100</del>    | <del>100</del>    |                   |                   | <u>1/2</u>                 |
| 001 | 113-204-1A-E        | COE-HG-AFTOUT-M23-R1 |                 |       |                          | <del>100</del>    | <del>100</del>    |                   |                   | <u>1/2</u>                 |
| 002 | 113-217-1A-E        | COE-HG-AFTOUT-M23-R2 |                 |       |                          | <del>100</del>    | <del>100</del>    |                   |                   | <u>1/2</u>                 |
| 003 | 113-217-2A-E        | COE-HG-AFTOUT-M23-R3 |                 |       |                          | <del>100</del>    | <del>100</del>    |                   |                   | <u>1/2</u>                 |
| 004 | 113-217-3A-E        | COE-HG-AFTOUT-M23-BT |                 |       |                          | <del>100</del>    | <del>100</del>    |                   |                   | <u>1/2</u>                 |
| 005 | 113-204-2A-D        | COE-HG-OUT-M23-SB    |                 |       |                          | <del>100</del>    | <del>100</del>    |                   |                   | <u>1/2</u>                 |

Gross weight of sample container + sample before/after aliquot removal

605 Extract and HOLD

COMMENTS:

Indicate below the TLI Identification Number of the Sample Fortification Solutions:

USF-AIS: \_\_\_\_\_

USF-I: 3345G 0.1ug/ml USF-A: 3496A 0.1ug/ml  
2/11/96 01/07/96

USF-ACS: \_\_\_\_\_

USF-MX: \_\_\_\_\_

USF-C: \_\_\_\_\_

Other: \_\_\_\_\_

Initial/Date SAH 2/07/96

LOT # (Solvents): Taken 2 950743

INITIALS OF BOTH THE SPIKER AND OBSERVER MUST BE ENTERED.  
(XXXXX = Gross Weight not provided for WATER Samples.)

for extraction: \_\_\_\_\_

REV 03/07/95 (PSTMF 7)

TRIANGLE LABORATORIES, INC.  
 SAMPLE EXTRACTION and CLEANUP TRACKING FORM  
 TLI Project: 36062

| EXTRACTION                      |                            |               |                           | CHROMATOGRAPHIC CLEANUP |             |                        |                        |               |                  |               |                       |
|---------------------------------|----------------------------|---------------|---------------------------|-------------------------|-------------|------------------------|------------------------|---------------|------------------|---------------|-----------------------|
| Ext S#.crd<br>and<br>TLI Number | Spike<br>before<br>Extr. ✓ | Extr. ✓       | Spike<br>after<br>Extr. ✓ | Acid<br>Base            | Big<br>Fish | Escld<br>Silica<br>Gel | Acid<br>Almina<br>6 gm | Flor-<br>isil | Carbon<br>Column | Trans-<br>fer | Add'l<br>Clean-<br>up |
| 000<br>TLI Blank                | SDP<br>2/10/96             | SDM<br>2/6/96 | SDM<br>2/6/96             |                         |             |                        |                        |               |                  | 2/10/96       |                       |
| 001<br>113-204-1A-E             |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
| 002<br>113-217-1A-E             |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
| X 003<br>113-217-2A-E           |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
| 004<br>113-217-3A-E             |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
| 005<br>113-204-2A-D             |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |               | 2/8/96                    |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |
|                                 |                            |               |                           |                         |             |                        |                        |               |                  |               |                       |

|                  |                    |              |             |              |
|------------------|--------------------|--------------|-------------|--------------|
| ...PROCEDURE...  | .....DETAILS.....  | Performed By | Observed By | ....DATE.... |
| Spike            |                    | SDM          | SDP         | 2/07/96      |
| Soxhelet Ext.    |                    | SDM          |             | 2/07/96      |
| Rotovap          | 40mL, 10mL Dryness | SDP          |             | 2/8/96       |
| Combine          |                    | N/A          |             | 2/8/96       |
| Divide           | 50:50              | SDP          |             | 2/8/96       |
| Solvent Exchange |                    |              |             | 2/8/96       |
| Add Tridecane    |                    |              |             | 2/8/96       |

Comments

Tridecane needs to be added after  
 extraction  
 Tridecane was added 100  
 2/8/96

Rev 01/25/96 (PSTMF 4)

| ...PROCEDURE.... | .....DETAILS.....   | Performed.By | Observed.By | ....DATE.... |
|------------------|---------------------|--------------|-------------|--------------|
| Spike BEFORE Ext |                     |              |             | — / — / —    |
| Extraction       | Soxhlet / Jar       |              |             | — / — / —    |
| Spike AFTER Ext  |                     |              |             | — / — / —    |
| Add Tridecane    |                     | L.B.         |             | 2 / 21 / 96  |
| Rotovap          | 40mL, 10mL, Dryness | J Lewis      |             | 2 / 21 / 96  |
| Combine          |                     |              |             | — / — / —    |
| Divide           |                     |              |             | — / — / —    |
| solvent Exchange |                     | J Lewis      |             | 2 / 21 / 96  |

Rev 02/08/96 (PSTMF 4)

TRIANGLE LABORATORIES, INC.  
Transfer Chain-of-Custody Form  
Project 36062-r1

Transfer From: DWLH5 To: DMS5

|              | Initials.. | Date.....       | Time...      |
|--------------|------------|-----------------|--------------|
| Released by: | <u>ADH</u> | <u>02/22/96</u> | <u>13:02</u> |
| Accepted by: | <u>NW</u>  | <u>2/22/96</u>  | <u>15:37</u> |

| MILES.ID.....             | TLI_No.....             | Cust.Id.....                    |
|---------------------------|-------------------------|---------------------------------|
| 36062-r1 -000             | TLI Blank               | TLI M23 Blank                   |
| 36062-r1 -003             | 113-217-2A-E            | COE-HG-AFTOUT-M23-R3            |
| <del>36062-r1 -0031</del> | <del>113-217-2A-E</del> | <del>COE-HG-AFTOUT-M23-R3</del> |

-----XfrCOC (Rev 11/01/94)-----  
Additional comments or instructions:

PROJECT: 36062r1

RS Conc  
20  $\mu$ l @ 0.1 NG/ $\mu$ l

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Spike File: SPX23704**

**Amt of Extract: 50%**

--REV 03/07/95 (PSTMF 6)--

# TRIANGLE LABORATORIES INC RUN LOG

| MS#   | COLUMN TYPE   | COLUMN # | PILOT NAME | PKD   | AMOUNT INJ | ACQUISITION | G/C |
|-------|---------------|----------|------------|-------|------------|-------------|-----|
| V6701 | DAS 60m 0.25u | 5906453  | GRU-119    | → TOL | 1.00ul     | 6pm         | 6pm |

| DATE    | TIME  | PROJECT# | SAMPLE#    | NO | CLIENT SAMPLE ID         | COMMENTS        | 332  | OP INIT | P | Q | SIR # | FILE #   |
|---------|-------|----------|------------|----|--------------------------|-----------------|------|---------|---|---|-------|----------|
| 2/19/90 | 10:16 | —        | 3499D      | —  | P2HK (fingerprint, pin)  | (A+L)           | 13.0 | VA      | ✓ | ✓ | 1110  | W0180-01 |
|         | 11:00 | —        | 34900      | —  | 8101m3 control (10)      | (100 T-2)(m4.3) | 1.4  | VA      | ✓ | ✓ |       | -02      |
|         | 12:15 | 36158H   | 20810      | 11 | ADDITIONAL CLAMP BLANK   | (m4.3)          | 5.3  | VA      | ✓ | ✓ |       | W0181-01 |
|         | 12:55 | 36158H   | 653        | 10 | LCI Dye                  | (Sample dye)    | 5.3  | VA      | ✓ | ✓ |       | -02      |
|         | 13:35 | —        | 11463.1M9  | 1  | H. SEC. - A - mms - A1   | (Sample dye)    | 1.5  | VA      | ✓ | ✓ |       | -03      |
|         | 14:15 | —        | 11463.2M9  | 2  | H. SEC. - A - mms - A2   | (Sample dye)    | 1.5  | ✓       | ✓ | ✓ |       | -04      |
|         | 14:55 | —        | 11463.3M9  | 3  | H. SEC. - A - mms - A3   | (Sample dye)    | 1.6  | ✓       | ✓ | ✓ |       | -05      |
|         | 15:35 | —        | 11463.4M9  | 5  | H. SEC. - A - mms - A1   | (Sample dye)    | 1.6  | ✓       | ✓ | ✓ |       | -06      |
|         | 16:14 | —        | 11463.5M9  | 6  | H. SEC. - A - mms - A2   | (Sample dye)    | 1.6  | ✓       | ✓ | ✓ |       | -07      |
|         | 16:56 | —        | 11463.6M9  | 7  | H. SEC. - A - mms - A3   | (Sample dye)    | 1.7  | ✓       | ✓ | ✓ |       | -08      |
|         | 17:36 | —        | 11463.7M9  | 11 | PR. APPLIC. CLAMP BLANK  | (m4.3)          | 3.1  | ✓       | ✓ | ✓ |       | -09      |
|         | 18:16 | —        | 11463.8M9  | 10 | LCI Dye                  | m4.3            | 3.7  | VA      | ✓ | ✓ |       | -10      |
|         | 18:59 | 36158H   | 653        | 10 | LCI Dye                  | NOT USED        | 4.2  | ✓       | ✓ | ✓ | 1110  | W0182-01 |
|         | 19:37 | 3606201  | —          | 0  | 721 M23 BLK              |                 | 4.6  | ✓       | ✓ | ✓ |       | -02      |
|         | 20:19 | —        | 11321372A2 | 3  | COE - H. - A. - T. - M23 | K3              | 4.6  | ✓       | ✓ | ✓ |       | -03      |

Control dye, 23:00

TRIANGLE LABORATORIES INC  
RUN LOG

| MS# | COLUMN TYPE     | COLUMN # | PLOT NAME | PKD | AMOUNT INJ | ACQUISITION | G/C      |
|-----|-----------------|----------|-----------|-----|------------|-------------|----------|
| V6A | DD225 304 0.25µ | 5923016  | RTZPKD    | TTI | 2.0µ       | XCONF-TT    | XCONF-TT |

| DATE    | TIME  | PROJECT# | SAMPLE#       | No | CLIENT SAMPLE ID           | COMMENTS | 332       | OP INIT | P | Q | SYR # | FILE #  |
|---------|-------|----------|---------------|----|----------------------------|----------|-----------|---------|---|---|-------|---------|
| 12/1/96 | 12:03 | —        | 3479E         | —  | RTCHK                      | (Good)   | 16%       | V14     | ✓ |   | RTCHK | X960732 |
| ↓       | 12:49 | —        | 3474          | A  | Tetra End 5.0              |          | 1.0<br>68 | V14     | ✓ |   | Tetra | X960733 |
| ↓       | 13:36 | —        | 3370N         | —  | RS100                      |          | 5.3<br>67 | V14     | ✓ |   | RS100 | X960734 |
| ↓       | 14:22 | 36022B   | 10E ALKAL     | 0  | TLC Sol. Alkal             |          | 5.0<br>67 | V14     | ✓ |   | X2281 | X960735 |
| ↓       | —     | 36022B   | 117-173-7     | 7  | TS121995WLS001             | gg V14   |           | V14     |   |   | 12281 | X960736 |
| ↓       | —     | 36022B   | 115-173-10    | 9  | TS121995WLS001             | 2/21/96  |           | V14     |   |   | 12281 | X960737 |
| ↓       | 15:10 | 36022B   | —             | 9  | TS121995WLS001             |          | 1.7<br>67 | V14     | ✓ |   | 12281 | X960738 |
| ↓       | 15:56 | 36022B   | —             | 7  | TS121995WLS001             |          | 5.5<br>67 | V14     | ✓ |   | 12281 | X960739 |
| 12/9/96 | 17:01 | 36160    | —             | 0  | T1 M23 Blank               |          | 5.3<br>67 | V14     | ✓ |   | X2281 | X960740 |
| 12/9/96 | 17:46 | 36160    | 114-65-1A-DE  | 1  | 7648-M23/10019-S100L-F.81K |          | 6.8<br>67 | SS      | ✓ |   | X2281 | X960741 |
| 12/9/96 | 18:41 | 36160    | 114-65-1A-DE  | 2  | —                          | -R1      | 4.3<br>67 | SS      | ✓ |   | X2281 | X960742 |
| 12/9/96 | 19:26 | 36160    | 114-65-1A-DE  | 3  | —                          | -R2      | 5.6<br>67 | SS      | ✓ |   | X2281 | X960743 |
| 12/9/96 | 20:12 | 36160    | 114-65-1A-DE  | 4  | —                          | -R3      | 1.1<br>67 | SS      | ✓ |   | X2281 | X960744 |
| 12/9/96 | 20:56 | 36239    | 114-144-1A-DE | 1  | 1-S-M23-2                  |          | 4.2<br>67 | SS      | ✓ |   | X2281 | X960745 |
| 12/9/96 | 21:41 | 36239    | 114-144-1A-DE | 2  | —                          | —        | 5.3<br>67 | SS      | ✓ |   | X2281 | X960746 |

**TRIANGLE LABORATORIES, INC.**

| MS# | COLUMN TYPE | COLUMN # | PLOT NAME | PKD | AMOUNT INJ | ACQUISITION | G/C |
|-----|-------------|----------|-----------|-----|------------|-------------|-----|
| 164 | DB225       | 5723016  | 2741PKT   | →   | 2.00       | KC085.5T    | →   |

[illegible]

|      |   |  |  |
|------|---|--|--|
| PAGE | # |  |  |
|------|---|--|--|



**TRIANGLE LABORATORIES OF RTP, INC.**

**SAMPLE  
DATA**

**PROPRIETARY INFORMATION**

TRIANGLE LABORATORIES, INC.  
Sample Result Summary for Project 36062r1  
Method 23X Full Screen Analyses (DB-5)

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| Data File     | W018202       | W018203              |
|---------------|---------------|----------------------|
| Sample ID     | TLI M23 Blank | COE-HG-AFTOUT-M23-R3 |
| Units         | ng            | ng                   |
| =====         |               |                      |
| Analytes      |               |                      |
| 2378-TCDD     | (0.008)       | 0.02                 |
| 12378-PeCDD   | (0.01)        | 0.11                 |
| 123478-HxCDD  | (0.01)        | 0.06                 |
| 123678-HxCDD  | (0.01)        | 0.07                 |
| 123789-HxCDD  | (0.01)        | 0.18                 |
| 1234678-HpCDD | (0.01)        | 0.73                 |
| OCDD          | 0.06          | 2.0                  |
| 2378-TCDF     | (0.006)       | 0.06                 |
| 12378-PeCDF   | (0.01)        | {0.02}               |
| 23478-PeCDF   | (0.008)       | {0.02}               |
| 123478-HxCDF  | (0.008)       | 0.06                 |
| 123678-HxCDF  | (0.006)       | 0.03                 |
| 234678-HxCDF  | {0.008}       | 0.03 B               |
| 123789-HxCDF  | (0.009)       | (0.01)               |
| 1234678-HpCDF | (0.007)       | 0.10                 |
| 1234789-HpCDF | (0.01)        | 0.02                 |
| OCDF          | 0.01          | 0.05 B               |
| TOTAL TCDD    | (0.008)       | 0.26                 |
| TOTAL PeCDD   | (0.01)        | 1.3                  |
| TOTAL HxCDD   | (0.01)        | 1.4                  |
| TOTAL HpCDD   | (0.01)        | 1.9                  |
| TOTAL TCDF    | (0.006)       | 0.35                 |
| TOTAL PeCDF   | (0.009)       | 0.32                 |
| TOTAL HxCDF   | {0.008}       | 0.28                 |
| TOTAL HpCDF   | (0.008)       | 0.18                 |

|                                                  |      |      |
|--------------------------------------------------|------|------|
| Other Standards Percent Recovery Summary (% Rec) |      |      |
| 37C1-TCDD                                        | 96.2 | 101  |
| 13C12-PeCDF 234                                  | 91.4 | 92.2 |
| 13C12-HxCDF 478                                  | 84.2 | 89.9 |
| 13C12-HxCDD 478                                  | 92.6 | 90.5 |
| 13C12-HpCDF 789                                  | 89.3 | 90.9 |

|                                                  |      |      |
|--------------------------------------------------|------|------|
| Other Standards Percent Recovery Summary (% Rec) |      |      |
| 13C12-HxCDF 789                                  | 80.6 | 66.4 |
| 13C12-HxCDF 234                                  | 81.4 | 65.5 |

|                                                     |      |      |
|-----------------------------------------------------|------|------|
| Internal Standards Percent Recovery Summary (% Rec) |      |      |
| 13C12-2378-TCDF                                     | 64.2 | 60.2 |
| 13C12-2378-TCDD                                     | 68.2 | 60.9 |
| 13C12-PeCDF 123                                     | 55.0 | 49.8 |
| 13C12-PeCDD 123                                     | 65.3 | 57.7 |
| 13C12-HxCDF 678                                     | 69.5 | 59.6 |
| 13C12-HxCDD 678                                     | 86.3 | 73.2 |
| 13C12-HpCDF 678                                     | 57.3 | 51.3 |
| 13C12-HpCDD 678                                     | 76.0 | 63.9 |
| 13C12-OCDD                                          | 67.4 | 56.4 |

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{Estimated Maximum Possible Concentration}, (Detection Limit).

TRIANGLE LABORATORIES, INC.  
Sample Result Summary for Project 36062r1  
Method 23X (DB-225)

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=====  
Data File           X960746  
Sample ID          COE-HG-AFTOUT-  
                    M23-R3  
Units              ng  
=====

Analytes  
2378-TCDF           0.01

Internal Standards Percent Recovery Summary (% Rec)  
13C12-2378-TCDF     43.7  
=====

# Roy F. Weston, Inc.

TLI Project: 36062r1  
Client Sample: TLI M23 Blank

Method 23 PCDD/PCDF Analysis (a)  
Analysis File: W018202

|                 |           |                  |          |             |          |
|-----------------|-----------|------------------|----------|-------------|----------|
| Client Project: | n/a       | Date Received:   | / /      | Spike File: | SPX23704 |
| Sample Matrix:  | XAD       | Date Extracted:  | 02/07/96 | ICal:       | WF52246  |
| TLI ID:         | TLI Blank | Date Analyzed:   | 02/29/96 | ConCal:     | W018002  |
| Sample Size:    | 1.000     | Dilution Factor: | n/a      | % Moisture: | n/a      |
| Dry Weight:     | n/a       | Blank File:      | W018202  | % Lipid:    | n/a      |
| GC Column:      | DB-5      | Analyst:         | DB       | % Solids:   | n/a      |

| Analytes             | Amt. (ng) | DL    | EMPC  | Ratio | RT    | Flags |
|----------------------|-----------|-------|-------|-------|-------|-------|
| 2,3,7,8-TCDD         | ND        | 0.008 |       |       |       | —     |
| 1,2,3,7,8-PeCDD      | ND        | 0.01  |       |       |       | —     |
| 1,2,3,4,7,8-HxCDD    | ND        | 0.01  |       |       |       | —     |
| 1,2,3,6,7,8-HxCDD    | ND        | 0.01  |       |       |       | —     |
| 1,2,3,7,8,9-HxCDD    | ND        | 0.01  |       |       |       | —     |
| 1,2,3,4,6,7,8-HpCDD  | ND        | 0.01  |       |       |       | —     |
| 1,2,3,4,6,7,8,9-OCDD | 0.06      |       |       | 0.83  | 34:21 | —     |
| 2,3,7,8-TCDF         | ND        | 0.006 |       |       |       | —     |
| 1,2,3,7,8-PeCDF      | ND        | 0.01  |       |       |       | —     |
| 2,3,4,7,8-PeCDF      | ND        | 0.008 |       |       |       | —     |
| 1,2,3,4,7,8-HxCDF    | ND        | 0.008 |       |       |       | —     |
| 1,2,3,6,7,8-HxCDF    | ND        | 0.006 |       |       |       | —     |
| 2,3,4,6,7,8-HxCDF    | EMPC      |       | 0.008 |       |       | —     |
| 1,2,3,7,8,9-HxCDF    | ND        | 0.009 |       |       |       | —     |
| 1,2,3,4,6,7,8-HpCDF  | ND        | 0.007 |       |       |       | —     |
| 1,2,3,4,7,8,9-HpCDF  | ND        | 0.01  |       |       |       | —     |
| 1,2,3,4,6,7,8,9-OCDF | 0.01      |       |       | 0.88  | 34:27 | —     |

| Totals      | Amt. (ng) | Number | DL    | EMPC  | Flags |
|-------------|-----------|--------|-------|-------|-------|
| Total TCDD  | ND        |        | 0.008 |       | —     |
| Total PeCDD | ND        |        | 0.01  |       | —     |
| Total HxCDD | ND        |        | 0.01  |       | —     |
| Total HpCDD | ND        |        | 0.01  |       | —     |
| Total TCDF  | ND        |        | 0.006 |       | —     |
| Total PeCDF | ND        |        | 0.009 |       | —     |
| Total HxCDF | EMPC      |        |       | 0.008 | —     |
| Total HpCDF | ND        |        | 0.008 |       | —     |

# Roy F. Weston, Inc.

TLI Project: 36062r1  
Client Sample: TLI M23 Blank

Method 23 PCDD/PCDF Analysis (a)  
Analysis File: W018202

| Internal Standards                                  | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|-----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF         | 2.6       | 64.2       | 40%-130%  | 0.77  | 20:17 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDD         | 2.7       | 68.2       | 40%-130%  | 0.80  | 21:06 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDF      | 2.2       | 55.0       | 40%-130%  | 1.54  | 24:36 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDD      | 2.6       | 65.3       | 40%-130%  | 1.49  | 25:43 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDF    | 2.8       | 69.5       | 40%-130%  | 0.50  | 28:22 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDD    | 3.5       | 86.3       | 40%-130%  | 1.26  | 29:05 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDF  | 2.3       | 57.3       | 25%-130%  | 0.43  | 31:04 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDD  | 3.0       | 76.0       | 25%-130%  | 1.08  | 31:55 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8,9-OCDD | 5.4       | 67.4       | 25%-130%  | 0.87  | 34:21 | —     |

| Surrogate Standards (Type A)                       | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>37</sup> Cl <sub>4</sub> -2,3,7,8-TCDD        | 3.8       | 96.2       | 70%-140%  |       | 21:07 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,7,8-PeCDF     | 3.7       | 91.4       | 70%-140%  | 1.48  | 25:21 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDF   | 3.4       | 84.2       | 70%-140%  | 0.51  | 28:16 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDD   | 3.7       | 92.6       | 70%-140%  | 1.22  | 29:00 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8,9-HpCDF | 3.6       | 89.3       | 70%-140%  | 0.41  | 32:16 | —     |

| Alternate Standards (Type A)                     | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|--------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDF | 3.2       | 80.6       | 40%-130%  | 0.50  | 29:35 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,6,7,8-HxCDF | 3.3       | 81.4       | 40%-130%  | 0.51  | 28:52 | —     |

| Recovery Standards                               | Ratio | RT    | Flags |
|--------------------------------------------------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD      | 0.82  | 20:54 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDD | 1.27  | 29:22 | —     |

Data Reviewer: She-Lewis 03/04/96

Initial ....Date...

Data Review By:

SL 3/4/96 Calculated Noise Area: 21.60

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

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Listing of W018202B.dbf  
Matched GC Peaks / Ratio / Ret. Time

Compound/  
M\_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID..

| Compound   | QC | Log | Omit  | Why | ..RT.     | OK | Ratio | Total.Area... | Area.Peak.1.. | Area.Peak.2.. | Rel.RT | Compound.Name.. | ID.. |
|------------|----|-----|-------|-----|-----------|----|-------|---------------|---------------|---------------|--------|-----------------|------|
| 13C12-TCDF |    |     |       |     | 0.65-0.89 |    |       |               |               |               |        | 0.951-1.049     |      |
| 316-318    | DC | NL  | 0:00  | RO  | 1.19      |    |       | 43.39         |               |               |        | 0.000           |      |
|            | DC | WL  | 18:38 |     | 0.75      |    |       | 14.95         |               |               |        | 0.919           |      |
|            | DC | WL  | 18:43 | RO  | 0.23      |    |       | 8.78          |               |               |        | 0.923           |      |
|            | DC | WL  | 19:05 |     | 0.72      |    |       | 1,758.32      |               |               |        | 0.941           |      |
|            |    |     | 19:48 | RO  | 0.42      |    |       | 171.27        | 74.58         | 177.33        |        | 0.976           |      |
|            |    |     | 20:17 |     | 0.77      |    |       | 27,434.70     | 11,907.90     | 15,526.80     | 1.000  | 13C12-2378-TCDF | ISO  |
|            |    |     | 20:47 |     | 0.84      |    |       | 317.08        | 144.40        | 172.68        |        | 1.025           |      |
|            | DC | WH  | 22:11 | RO  | 0.35      |    |       | 44.58         |               |               |        | 1.094           |      |
| 316-318    |    |     |       |     |           |    |       | 27,923.05     |               |               |        |                 |      |
|            |    |     |       |     |           |    |       | 3 Peaks       |               |               |        |                 |      |

----- Above: TCDF / TCDD Follows -----

| Compound   | QC | Log | Omit  | Why | ..RT.     | OK | Ratio | Total.Area... | Area.Peak.1.. | Area.Peak.2.. | Rel.RT | Compound.Name.. | ID..           |
|------------|----|-----|-------|-----|-----------|----|-------|---------------|---------------|---------------|--------|-----------------|----------------|
| TCDD       |    |     |       |     | 0.65-0.89 |    |       |               |               |               |        | 0.858-1.062     |                |
| 320-322    | DC | NL  | 0:00  |     | 0.78      |    |       | 34.26         |               |               |        | 0.000           |                |
|            | DC | SN  | 18:35 |     | 0.89      |    |       | 10.32         |               |               |        | 0.881           |                |
|            | DC | SN  | 20:51 |     | 0.76      |    |       | 8.67          |               |               |        | 0.988           |                |
|            | DC | SN  | 21:09 | RO  | 0.60      |    |       | 8.41          |               |               |        | 1.002           | 2378-TCDD AN   |
|            | DC | SN  | 21:12 |     | 0.79      |    |       | 7.36          |               |               |        | 1.005           |                |
|            | DC | SN  | 21:18 | RO  | 0.39      |    |       | 6.43          |               |               |        | 1.009           |                |
| 320-322    |    |     |       |     |           |    |       | 0.00          |               |               |        |                 |                |
|            |    |     |       |     |           |    |       | 0 Peaks       |               |               |        |                 |                |
| 37C1-TCDD  |    |     |       |     |           |    |       |               |               |               |        | 0.905-1.095     |                |
| 328        | DC | NL  | 0:00  |     |           |    |       | 13.59         |               |               |        | 0.000           |                |
|            | DC | SN  | 19:53 |     |           |    |       | 12.19         |               |               |        | 0.942           |                |
|            |    |     | 21:07 |     |           |    |       | 21,687.00     | 21,687.00     |               |        | 1.001           | 37C1-TCDD SUR1 |
|            |    |     | 21:16 |     |           |    |       | 97.81         | 97.81         |               |        | 1.008           |                |
|            |    |     | 21:21 |     |           |    |       | 25.99         | 25.99         |               |        | 1.012           |                |
|            | DC | SN  | 21:24 |     |           |    |       | 23.04         |               |               |        | 1.014           |                |
| 328        |    |     |       |     |           |    |       | 21,810.80     |               |               |        |                 |                |
|            |    |     |       |     |           |    |       | 3 Peaks       |               |               |        |                 |                |
| 13C12-TCDD |    |     |       |     | 0.65-0.89 |    |       |               |               |               |        | 0.905-1.095     |                |
| 332-334    | DC | NL  | 0:00  | RO  | 2.23      |    |       | 38.82         |               |               |        | 0.000           |                |
|            | DC | SN  | 19:45 | RO  | 0.26      |    |       | 57.33         |               |               |        | 0.936           |                |
|            |    |     | 20:54 |     | 0.82      |    |       | 33,623.70     | 15,149.50     | 18,474.20     | 0.991  | 13C12-1234-TCDD | RS1            |
|            |    |     | 21:06 |     | 0.80      |    |       | 23,624.50     | 10,514.50     | 13,110.00     | 1.000  | 13C12-2378-TCDD | IS1            |
|            |    |     | 21:16 | RO  | 2.15      |    |       | 67.50         | 81.99         | 38.14         |        | 1.008           |                |
|            | DC | SN  | 21:22 | RO  | 2.44      |    |       | 21.55         |               |               |        | 1.013           |                |
|            |    |     | 21:27 |     | 0.68      |    |       | 349.49        | 141.00        | 208.49        |        | 1.017           |                |
| 332-334    |    |     |       |     |           |    |       | 57,665.19     |               |               |        |                 |                |
|            |    |     |       |     |           |    |       | 4 Peaks       |               |               |        |                 |                |

----- Above: TCDD / PeCDF Follows -----

# Roy F. Weston, Inc.

TLI Project: 36062r1  
 Client Sample: COE-HG-AFTOUT-M23-R3

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: W018203

|                 |                     |                  |          |             |          |
|-----------------|---------------------|------------------|----------|-------------|----------|
| Client Project: | COE Hot Gas Program | Date Received:   | 02/06/96 | Spike File: | SPX23704 |
| Sample Matrix:  | M23                 | Date Extracted:  | 02/07/96 | ICal:       | WF52246  |
| TLI ID:         | 113-217-2A-E        | Date Analyzed:   | 02/29/96 | ConCal:     | W018002  |
| Sample Size:    | 1.000               | Dilution Factor: | n/a      | % Moisture: | n/a      |
| Dry Weight:     | n/a                 | Blank File:      | W018202  | % Lipid:    | n/a      |
| GC Column:      | DB-5                | Analyst:         | DB       | % Solids:   | n/a      |

| Analytes             | Amt. (ng) | DL   | EMPC | Ratio | RT    | Flags |
|----------------------|-----------|------|------|-------|-------|-------|
| 2,3,7,8-TCDD         | 0.02      |      |      | 0.79  | 21:07 | —     |
| 1,2,3,7,8-PeCDD      | 0.11      |      |      | 1.46  | 25:44 | —     |
| 1,2,3,4,7,8-HxCDD    | 0.06      |      |      | 1.11  | 29:01 | —     |
| 1,2,3,6,7,8-HxCDD    | 0.07      |      |      | 1.08  | 29:06 | —     |
| 1,2,3,7,8,9-HxCDD    | 0.18      |      |      | 1.27  | 29:23 | PR    |
| 1,2,3,4,6,7,8-HpCDD  | 0.73      |      |      | 1.02  | 31:55 | —     |
| 1,2,3,4,6,7,8,9-OCDD | 2.0       |      |      | 0.89  | 34:21 | —     |
| 2,3,7,8-TCDF         | 0.06      |      |      | 0.66  | 20:20 | —     |
| 1,2,3,7,8-PeCDF      | EMPC      |      | 0.02 |       |       | —     |
| 2,3,4,7,8-PeCDF      | EMPC      |      | 0.02 |       |       | —     |
| 1,2,3,4,7,8-HxCDF    | 0.06      |      |      | 1.05  | 28:15 | PR    |
| 1,2,3,6,7,8-HxCDF    | 0.03      |      |      | 1.12  | 28:22 | —     |
| 2,3,4,6,7,8-HxCDF    | 0.03      |      |      | 1.34  | 28:52 | B, PR |
| 1,2,3,7,8,9-HxCDF    | ND        | 0.01 |      |       |       | —     |
| 1,2,3,4,6,7,8-HpCDF  | 0.10      |      |      | 0.96  | 31:05 | —     |
| 1,2,3,4,7,8,9-HpCDF  | 0.02      |      |      | 0.93  | 32:17 | —     |
| 1,2,3,4,6,7,8,9-OCDF | 0.05      |      |      | 0.83  | 34:29 | B     |

| Totals      | Amt. (ng) | Number | DL | EMPC | Flags |
|-------------|-----------|--------|----|------|-------|
| Total TCDD  | 0.26      | 7      |    | 0.42 | —     |
| Total PeCDD | 1.3       | 11     |    | 1.3  | —     |
| Total HxCDD | 1.4       | 7      |    |      | —     |
| Total HpCDD | 1.9       | 2      |    |      | —     |
| Total TCDF  | 0.35      | 9      |    |      | —     |
| Total PeCDF | 0.32      | 8      |    | 0.38 | —     |
| Total HxCDF | 0.28      | 8      |    | 0.30 | —     |
| Total HpCDF | 0.18      | 4      |    |      | —     |

# Roy F. Weston, Inc.

TLI Project: 36062r1  
 Client Sample: COE-HG-AFTOUT-M23-R3

Method 23 PCDD/PCDF Analysis (a)  
 Analysis File: W018203

| Internal Standards                                  | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|-----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF         | 2.4       | 60.2       | 40%-130%  | 0.76  | 20:17 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDD         | 2.4       | 60.9       | 40%-130%  | 0.80  | 21:06 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDF      | 2.0       | 49.8       | 40%-130%  | 1.51  | 24:36 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8-PeCDD      | 2.3       | 57.7       | 40%-130%  | 1.56  | 25:43 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDF    | 2.4       | 59.6       | 40%-130%  | 0.50  | 28:21 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,6,7,8-HxCDD    | 2.9       | 73.2       | 40%-130%  | 1.20  | 29:05 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDF  | 2.1       | 51.3       | 25%-130%  | 0.42  | 31:04 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8-HpCDD  | 2.6       | 63.9       | 25%-130%  | 1.06  | 31:55 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,6,7,8,9-OCDD | 4.5       | 56.4       | 25%-130%  | 0.87  | 34:21 | —     |

| Surrogate Standards (Type A)                       | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|----------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>37</sup> Cl <sub>4</sub> -2,3,7,8-TCDD        | 4.0       | 101        | 70%-140%  |       | 21:07 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,7,8-PeCDF     | 3.7       | 92.2       | 70%-140%  | 1.51  | 25:21 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDF   | 3.6       | 89.9       | 70%-140%  | 0.50  | 28:15 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8-HxCDD   | 3.6       | 90.5       | 70%-140%  | 1.23  | 29:00 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,4,7,8,9-HpCDF | 3.6       | 90.9       | 70%-140%  | 0.40  | 32:15 | —     |

| Alternate Standards (Type A)                     | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|--------------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDF | 2.7       | 66.4       | 40%-130%  | 0.47  | 29:35 | —     |
| <sup>13</sup> C <sub>12</sub> -2,3,4,6,7,8-HxCDF | 2.6       | 65.5       | 40%-130%  | 0.50  | 28:53 | —     |

| Recovery Standards                               | Ratio | RT    | Flags |
|--------------------------------------------------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD      | 0.81  | 20:54 | —     |
| <sup>13</sup> C <sub>12</sub> -1,2,3,7,8,9-HxCDD | 1.21  | 29:23 | —     |

Data Reviewer: Shu-Lewis 03/04/96



# Roy F. Weston, Inc.

TLI Project: 36062r1      Method 23 TCDD/TCDF Analysis (DB-225)  
 Client Sample: COE-HG-AFTOUT-M23-R3      Analysis File: X960746

|                 |                     |                  |          |             |          |
|-----------------|---------------------|------------------|----------|-------------|----------|
| Client Project: | COE Hot Gas Program | Date Received:   | 02/06/96 | Spike File: | SPC2NF04 |
| Sample Matrix:  | M23                 | Date Extracted:  | 02/07/96 | ICal:       | XF21266  |
| TLI ID:         | 113-217-2A-E        | Date Analyzed:   | 02/29/96 | ConCal:     | X960733  |
| Sample Size:    | 1.000               | Dilution Factor: | n/a      | % Moisture: | n/a      |
| Dry Weight:     | n/a                 | Blank File:      | W018202  | % Lipid:    | n/a      |
| GC Column:      | DB-225              | Analyst:         | DB       | % Solids:   | n/a      |

| Analytes     | Amt. (ng) | DL | EMPC | Ratio | RT    | Flags |
|--------------|-----------|----|------|-------|-------|-------|
| 2,3,7,8-TCDF | 0.01      |    |      | 0.72  | 19:22 | —     |

| Internal Standard                           | Amt. (ng) | % Recovery | QC Limits | Ratio | RT    | Flags |
|---------------------------------------------|-----------|------------|-----------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -2,3,7,8-TCDF | 1.7       | 43.7       | 40%-130%  | 0.80  | 19:20 | —     |

| Recovery Standard                           | Ratio | RT    | Flags |
|---------------------------------------------|-------|-------|-------|
| <sup>13</sup> C <sub>12</sub> -1,2,3,4-TCDD | 0.78  | 18:24 | —     |

Data Reviewer: She-Lewis 03/04/96

---

**APPENDIX J**

**RESULTS OF AMBIENT AIR MONITORING FOR EXPLOSIVES**

---

**Air Monitoring Results**  
**Hot-Gas Decontamination Validation Tests**

All samples were analyzed for  
 RDX, Tetryl and 2,4,6-TNT

| Date      | RFW # | Sample ID      | Results    |
|-----------|-------|----------------|------------|
| 30-Jan-96 |       |                |            |
|           | 001   | EAED29JAN96-1  | Non-Detect |
|           | 002   | EPED29JAN96-1  | Non-Detect |
|           | 003   | EPIM29JAN96-1  | Non-Detect |
|           | 004   | EPIM29JAN96-1  | Non-Detect |
|           | 005   | EPIS29JAN96-1  | Non-Detect |
|           | 006   | EPIS29JAN96-2  | Non-Detect |
|           | 007   | EAEU29JAN96-1  | Non-Detect |
|           | 008   | EAEU29JAN96-1  | Non-Detect |
| 3-Feb-96  |       |                |            |
|           | 001   | EPIS31JAN96-2  | Non-Detect |
|           | 002   | EPIS31JAN96-2  | Non-Detect |
|           | 003   | EPIM31JAN96-2  | Non-Detect |
|           | 004   | EPIM31JAN96-2  | Non-Detect |
|           | 005   | EAED31JAN96-2  | Non-Detect |
|           | 006   | EAED31JAN96-2  | Non-Detect |
|           | 007   | EAEU31JAN96-2  | Non-Detect |
|           | 008   | EAEU31JAN96-2  | Non-Detect |
| 10-Feb-96 |       |                |            |
|           | 001   | TB06FEB97F     | Non-Detect |
|           | 002   | TB06FEB97B     | Non-Detect |
|           | 003   | BLO6FEB96F     | Non-Detect |
|           | 004   | BL06FEB96B     | Non-Detect |
|           | 005   | EPPM07FEB96F   | Non-Detect |
|           | 006   | EPPM07FEB96B   | Non-Detect |
|           | 007   | EPIM06FEB96-3F | Non-Detect |
|           | 008   | EPIM06FEB96-3B | Non-Detect |
|           | 009   | EPIS06FEB96-3F | Non-Detect |
|           | 010   | EPIS06FEB96-3B | Non-Detect |
|           | 011   | EAEU06FEB96-3F | Non-Detect |
|           | 012   | EAEU06FEB96-3B | Non-Detect |
|           | 013   | EAED06FEB96-3F | Non-Detect |
|           | 014   | EAED06FEB96-3B | Non-Detect |
|           | 015   | EPPS07FEB96F   | Non-Detect |
|           | 016   | EPPS07FEB96B   | Non-Detect |
| 12-Feb-96 |       |                |            |
|           | 004   | XAED12FEB96-1  | Non-Detect |
|           | 005   | XAEU12FEB96-1  | Not-Detect |
| 15-Feb-96 |       |                |            |
|           | 006   | XAEU15FEB96-2  | Not-Detect |
|           | 007   | XAED15FEB96-2  | Not-Detect |
| 20-Feb-96 |       |                |            |
|           | 002   | XAEU20FEB96-3  | Not-Detect |
|           | 003   | XAED20FEB96-3  | Not-Detect |

**Sample I.D. Code:**

|                 |              |                       |                      |             |
|-----------------|--------------|-----------------------|----------------------|-------------|
| E               | A            | E                     | D                    | 29JAN96     |
| (E) Explosive   | (P) Personal | (I) Initial           | (S) Spiking - Matt   | Date        |
| (X) Particulate | (A) Area     | (P) Post              | (M) Maintenance - Vu | of Sampling |
| (A) Asbestos    |              | (E) Eight Hour Sample | (U) Upwind           |             |
|                 |              |                       | (D) Downwind         |             |
|                 |              |                       | (C) Center           |             |

TB - Trip Blank  
 BL - Field Blank



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
© 610-701-6100 • Fax 610-701-6140

## LIONVILLE ANALYTICAL LABORATORY ANALYTICAL CASE NARRATIVE

Client: COE-HOT GAS  
RFW #: 9602L978

W.O. #: 02281-012-012-9999-00  
Date Received: 08 February 1996

### EXPLOSIVE

1. The set of samples consisted of six (6) air samples collected on 30 January 1996.
2. The samples were prepared on 13 February 1996 and analyzed for Explosives by OSHA Method 44, modified for HPLC analysis on 14,16 February 1996.
3. Laboratory control limits were not available for assessing spike recoveries.

*Bruce C. Taylor*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2-22-96  
Date

cs/jkd/misc/02-978.ex

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 6 pages.



**DATA QUALIFIERS**

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

**ABBREVIATIONS**

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates spiked compound.

**Roy F. Weston, Inc. - Lionville Laboratory**

Explosives by HPLC / Method 8330

Report Date: 02/19/96 15:24

RFW Batch Number: 9602L978

**Client: COE-HOT GAS**

**Work Order: 02281-012-012-9999-00**

**Page:**

Cust ID: EAED29JAN96 - EPED29JAN96 - EPIM29JAN96 - EPIS29JAN96 -

### Sample Information

**RFW#:**

**Matrix:**

..  
E.  
D.

Units:

|                       | fl      | fl      | fl      | fl      | fl      |
|-----------------------|---------|---------|---------|---------|---------|
| RDX                   | 0.20 U  | 0.20 U  | 0.20 U  | 0.20 U  | 0.20 U  |
| Tetryl                | 0.15 U  | 0.15 U  | 0.15 U  | 0.15 U  | 0.15 U  |
| 2,4,6-Trinitrotoluene | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U |

Cust ID: EAEU29JAN96- EAEU29JAN96-

**Sample  
Informa**

**RFW#:**

**Matrix:**

D.F.:

|                       | fl    | fl | fl    | fl | fl    | fl |
|-----------------------|-------|----|-------|----|-------|----|
| RDX                   | 0.20  | U  | 0.20  | U  | 0.20  | U  |
| Tetryl                | 0.15  | U  | 0.15  | U  | 0.15  | U  |
| 2,4,6-Trinitrotoluene | 0.050 | U  | 0.050 | U  | 0.050 | U  |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked. % = Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

20/9/20

**RFW Batch Number: 9602L978**

**Client: COE-HOT GAS**

**Work Order: 02281-012-012-9999-00**

| Cust ID: | BLK | BLK BS | BLK BSD |
|----------|-----|--------|---------|
|----------|-----|--------|---------|

Sample RFW#: 96LLC023-MB1 96LLC023-MB1 96LLC023-MB1

## Information

**Matrix:**

D.F.: 1.00

|        |          |          |
|--------|----------|----------|
| Units: | total ug | total ug |
|--------|----------|----------|

[illegible]

RDX

0.20 U

87%

68%

Tetryl

0.15 U

14%

13%

2,4,6-Trinitrotoluene

0.050 U

26%

33%

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

$$\frac{m}{n}$$

Roy F. Weston, Inc. - Lionville Laboratory  
8330 ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/08/96

RFW LOT # :9602L978

| CLIENT ID     | RFW # | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------|-------|-----|----------|------------|-----------|----------|
| EAED29JAN96-1 | 001   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/16/96 |
| EPED29JAN96-1 | 002   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/16/96 |
| EPIM29JAN96-1 | 003   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/16/96 |
| EPIM29JAN96-1 | 004   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/16/96 |
| EPIS29JAN96-1 | 005   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/16/96 |
| EPIS29JAN96-1 | 006   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/14/96 |
| EAEU29JAN96-1 | 007   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/14/96 |
| EAEU29JAN96-1 | 008   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/14/96 |
| BLANK-1       | 009   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/14/96 |
| BLANK-1       | 010   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/14/96 |
| TRIP BLANK-1  | 011   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/14/96 |
| TRIP BLANK-1  | 012   | AI  | 96LLC023 | 01/30/96   | 02/13/96  | 02/14/96 |

LAB QC:

|     |         |    |          |     |          |          |
|-----|---------|----|----------|-----|----------|----------|
| BLK | MB1     | AI | 96LLC023 | N/A | 02/13/96 | 02/14/96 |
| BLK | MB1 BS  | AI | 96LLC023 | N/A | 02/13/96 | 02/14/96 |
| BLK | MB1 BSD | AI | 96LLC023 | N/A | 02/13/96 | 02/14/96 |

05 Cor 2/20/96



# Custody Transfer Record/Lab Work Request

Client COC FLOT 6AS  
 Est. Final Proj. Sampling Date 0228-012-9999-00  
 Work Order # 0228-012-9999-00  
 Project Contact/Phone # 700-212-9999  
 AD Project Manager SM  
 OC SM  
 Date Rec'd 2/28/96 Date 2/28/96  
 Account # 0228-012-9999-00

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix Chosen (✓) | MS MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only |     |      |       |    |
|---------------|--------|-----------------------|-------------------|--------|--------|----------------|----------------|---------------------------|-----|------|-------|----|
|               |        |                       |                   |        |        |                |                | VOA                       | PCB | Herb | INORG | NC |
| S - Soil      | 001    | E4ED29JAN96-1         | ✓                 |        | HLV    | 1/30/96        |                |                           |     |      |       |    |
| SE - Sediment | 002    | EPIM29JAN96-1         | ✓                 |        |        |                |                |                           |     |      |       |    |
| SO - Solid    | 003    | EPIS29JAN96-1         | ✓                 |        |        |                |                |                           |     |      |       |    |
| SL - Sludge   | 004    | EAEU29JAN96-1         | ✓                 |        |        |                |                |                           |     |      |       |    |
| W - Water     | 005    | BLANK-1               | ✓                 |        |        |                |                |                           |     |      |       |    |
| O - Oil       | 006    | Trip Blank -1         | ✓                 |        |        |                |                |                           |     |      |       |    |
| A - Air       |        |                       |                   |        |        |                |                |                           |     |      |       |    |
| D9 - Drum     |        |                       |                   |        |        |                |                |                           |     |      |       |    |
| DL - Drum     |        |                       |                   |        |        |                |                |                           |     |      |       |    |
| L - EPTCLP    |        |                       |                   |        |        |                |                |                           |     |      |       |    |
| WI - Wipe     |        |                       |                   |        |        |                |                |                           |     |      |       |    |
| X - Other     |        |                       |                   |        |        |                |                |                           |     |      |       |    |
| F - Fish      |        |                       |                   |        |        |                |                |                           |     |      |       |    |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

DATE/REVISIONS:  
 1. Blank + TB not in bag COC  
 2. No detection collected on  
 3. Blank + TB - used 1/30/96  
 4. Unless otherwise notified  
 5. changed Del to STD per SDH 4/96  
 6.

WESTON Analytics Use Only

Samples were:  
 1) Shipped ☒ or Hand Delivered ☒  
 2) Ambient or Chilled ☒  
 3) Received in Good Condition ☒  
 4) Labels Indicate Properly Preserved ☒  
 5) Received Within Holding Time ☒  
 6) Unbroken on Sample ☒  
 7) Unbroken on Sample ☒  
 8) COC Record Present Upon Sample Rec't ☒

Discrepancies Between Samples Labels and COC Record: ☒  
 NOTES:

Temp = 14.1



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
® 610-701-6100 • Fax 610-701-6140

## LIONVILLE ANALYTICAL LABORATORY ANALYTICAL CASE NARRATIVE

Client: COE-HOT GAS  
RFW #: 9602L975

W.O. #: 02281-012-012-9999-00  
Date Received: 08 February 1996

### EXPLOSIVE

1. The set of samples consisted of six (6) air samples collected on 03 February 1996.
2. The samples were prepared on 13 February 1996 and analyzed for Explosives by OSHA Method 44, modified for HPLC analysis on 14,16 February 1996.
3. Laboratory control limits were not available for assessing spike recoveries.

*Ben Taylor*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2-22-96

Date

cs/jkd/misc/02-975.ex

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 6 pages.



**DATA QUALIFIERS**

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- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

**ABBREVIATIONS**

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- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates spiked compound.

Report Date: 02/19/96 15:23

Explosives by HPLC / Method 8330

Client: COE-HOT GAS      Work Order: 02281-012-012-9999-00      Page: 1

**REFW Batch Number: 9602L975**

**Work Order: 02281-012-012-9999-00**

**Page:**

Guest ID: EPIS31JAN96- EPIS31JAN96- EPIM31JAN96- EAED31JAN96- EAED31JAN96-

## Sample Information

RFW#: 001

**Matrix:**

D.F. ::

**Units:**

[illegible]

| Cust ID: | EAEU31JAN96- | BLANK-2 | TRIP BLANK-2 | TRIP BLANK-2 |
|----------|--------------|---------|--------------|--------------|
|          |              |         |              |              |

## Sample

**RFW#:**

**Matrix:**

D.F.:

Units:

[illegible]

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
% = Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

$\mathcal{G}_v / \mathcal{G}_u$

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Report Date: 02/19/96 15:23

Client: COE-HOT GAS Work Order: 02281-012-012-9999-00 Page: 2

RFW Batch Number: 9602L975

Cust ID: BLK BLK BS BLK BSD

Sample Information RFW#: 96LLC023-MB1 96LLC023-MB1 96LLC023-MB1

Matrix: AIR AIR AIR

D.F.: 1.00 1.00 1.00

Units: total ug total ug total ug

|                       |       |   |    |   |    |   |
|-----------------------|-------|---|----|---|----|---|
| RDX                   | 0.20  | U | 87 | % | 89 | % |
| Tetryl                | 0.15  | U | 14 | % | 13 | % |
| 2,4,6-Trinitrotoluene | 0.050 | U | 26 | % | 33 | % |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

Copy 1/20/96

Roy F. Weston, Inc. - Lionville Laboratory  
8330 ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/08/96

RFW LOT # :9602L975

| CLIENT ID     | RFW # | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------|-------|-----|----------|------------|-----------|----------|
| EPIS31JAN96-2 | 001   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/14/96 |
| EPIS31JAN96-2 | 002   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/14/96 |
| EPIM31JAN96-2 | 003   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/14/96 |
| EPIM31JAN96-2 | 004   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/14/96 |
| EAED31JAN96-2 | 005   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/14/96 |
| EAED31JAN96-2 | 006   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/14/96 |
| EAEU31JAN96-2 | 007   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/14/96 |
| EAEU31JAN96-2 | 008   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/16/96 |
| BLANK-2       | 009   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/16/96 |
| BLANK-2       | 010   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/16/96 |
| TRIP BLANK-2  | 011   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/16/96 |
| TRIP BLANK-2  | 012   | AI  | 96LLC023 | 02/03/96   | 02/13/96  | 02/16/96 |

LAB QC:

|     |         |    |          |     |          |          |
|-----|---------|----|----------|-----|----------|----------|
| BLK | MB1     | AI | 96LLC023 | N/A | 02/13/96 | 02/14/96 |
| BLK | MB1 BS  | AI | 96LLC023 | N/A | 02/13/96 | 02/14/96 |
| BLK | MB1 BSD | AI | 96LLC023 | N/A | 02/13/96 | 02/14/96 |

*Er 2/20/96*

# Custody Transfer Record/Lab Work Request

Client Coe Flo + Gas  
 Est. Final Proj. Sampling Date 02281-02-012-9999-00  
 Work Order # 02281-02-012-9999-00  
 Project Contact/Phone # Julius Bogen  
 AD Project Manager Julius Bogen  
 QC SD Date 2/18/96 Due 2/25/96  
 Date Rec'd 2/18/96 Date Due 2/25/96  
 Account # 05-Hulgas

Refrigerator # 1000000000  
 #Type Container Liquid  
 Volume 210g  
 Preservatives None  
 ANALYSES REQUESTED Explosives  
 VOA None  
 BNA None  
 PCB None  
 Herb None  
 INORG None  
 Metal None

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix Chosen (✓) |     | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------|--------|-----------------------|-------------------|-----|--------|----------------|----------------|---------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|               |        |                       | MS                | MSD |        |                |                |                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: EXPLOSIVES = RDX, Tetra, TNT

DATE/REVISIONS: 1. Rec'd Blank, TB not  
2. on 02-01-96  
3. no date or time collected on  
4. TB + Blank - used 2/18/96  
5. no date or time collected  
6. changed Del to 2/25/96 per SDH

| Relinquished by     | Received by         | Date           | Time         |
|---------------------|---------------------|----------------|--------------|
| <u>Julius Bogen</u> | <u>Julius Bogen</u> | <u>2/18/96</u> | <u>14:30</u> |

Discrepancies Between Samples Labels and COC Record: Y N

NOTES: Explosives

WESTON Analytics Use Only

Samples were: 1. Shipped 2. Present on Outer Package Y N  
3. Ambient or Chilled Y N  
4. Received in Good Condition Y N  
5. Labels Indicate Properly Preserved Y N  
6. Unbroken on Sample Y N  
7. COC Record Present Upon Sample Rec'd Y N

Temp = 14.9°C



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
® 610-701-6100 • Fax 610-701-6140

## LIONVILLE ANALYTICAL LABORATORY ANALYTICAL CASE NARRATIVE

Client: COE-HOT GAS  
RFW #: 9602L084

W.O. #: 02281-012-012-9999-00  
Date Received: 15 February 1996

### EXPLOSIVE

1. The set of samples consisted of eight (8) air samples collected on 10 February 1996.
2. The samples were prepared on 20 February 1996 and analyzed for Explosives by OSHA Method 44, modified for HPLC analysis on 21 February 1996.
3. All required holding times for extraction and analysis were met.
4. All initial calibrations associated with this data set were within acceptance criteria.
5. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
6. Laboratory control limits were not available for assessing spike recoveries.

*Bruce C. Taylor*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

2-23-96  
Date

cs/jkd/misc/02-084.ex

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 6 pages.





**DATA QUALIFIERS**

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

**ABBREVIATIONS**

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates spiked compound.

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked. % = percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Report Date: 02/22/96 12:02

RFW Batch Number: 9602L084

Client: COE-HOT GAS

Work Order: 02281-012-012-9999-00

Page: 2

Cust ID: EAED06FEB96- 3B EAED06FEB96- EPPS07FEB96F EPPS07FEB96B BLK BLK BS

|                    |                 |          |          |          |              |              |              |
|--------------------|-----------------|----------|----------|----------|--------------|--------------|--------------|
| Sample Information | RFW#: 013       | 014      | 015      | 016      | 96LLC029-MB1 | 96LLC029-MB1 | 96LLC029-MB1 |
|                    | AIR             | AIR      | AIR      | AIR      | AIR          | AIR          | AIR          |
|                    | D.F.: 1.00      | 1.00     | 1.00     | 1.00     | 1.00         | 1.00         | 1.00         |
|                    | Units: total ug | total ug | total ug | total ug | total ug     | total ug     | total ug     |

|                       |         |         |         |         |         |         |      |
|-----------------------|---------|---------|---------|---------|---------|---------|------|
| RDX                   | 0.20 U  | 0.20 U  | 0.20 U  | 0.20 U  | 0.20 U  | 0.20 U  | 71 % |
| Tetryl                | 0.15 U  | 0.15 U  | 0.15 U  | 0.15 U  | 0.15 U  | 0.15 U  | 10 % |
| 2,4,6-Trinitrotoluene | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 0.050 U | 32 % |

Cust ID: BLK BSD

|                    |                    |
|--------------------|--------------------|
| Sample Information | RFW#: 96LLC029-MB1 |
|                    | Matrix: AIR        |
|                    | D.F.: 1.00         |
|                    | Units: total ug    |

|                       |      |
|-----------------------|------|
| RDX                   | 65 % |
| Tetryl                | 10 % |
| 2,4,6-Trinitrotoluene | 71 % |

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.  
 %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. \*= Outside of Advisory limits.

Roy F. Weston, Inc. - Lionville Laboratory  
8330 ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 02/15/96

RFW LOT # :9602L084

| CLIENT ID      | RFW # | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|----------------|-------|-----|----------|------------|-----------|----------|
| TB06FEB97F     | 001   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| TB06FEB97B     | 002   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| BL06FEB96F     | 003   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| BL06FEB96B     | 004   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EPPM07FEB96F   | 005   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EPPM07FEB96B   | 006   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EPIM06FEB96-3F | 007   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EPIM06FEB96-3B | 008   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EPIS06FEB96-3F | 009   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EPIS06FEB96-3B | 010   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EAEU06FEB96-3F | 011   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EAEU06FEB96-3B | 012   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EAED06FEB96-3F | 013   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EAED06FEB96-3B | 014   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EPPS07FEB96F   | 015   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |
| EPPS07FEB96B   | 016   | AI  | 96LLC029 | 02/10/96   | 02/20/96  | 02/21/96 |

LAB QC:

|     |         |    |          |     |          |          |
|-----|---------|----|----------|-----|----------|----------|
| BLK | MB1     | AI | 96LLC029 | N/A | 02/20/96 | 02/21/96 |
| BLK | MB1 BS  | AI | 96LLC029 | N/A | 02/20/96 | 02/21/96 |
| BLK | MB1 BSD | AI | 96LLC029 | N/A | 02/20/96 | 02/21/96 |

# Custody Transfer Record/Lab Work Request

WESTON Analytics Use Only  
**96022084**

Client: **WAFEC** COE-Ho Hoag  
Est. Final Proj. Start Date: **02-28-012-012-9999-00**  
Work Order #: **02281-012-012-9999-00**  
Project Contact/Phone #: **1-800-368-7292**  
AD Project Manager: **Debbie Baker**  
QC: **SPD** Date Rec'd: **2/15/99** Date Due: **2/27/99**  
Account #: **02281-012-012-9999-00**

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix Chosen (✓) | Date Collected | Time Collected | WESTON Analytics Use Only |     |         |       |
|---------------|--------|-----------------------|-------------------|----------------|----------------|---------------------------|-----|---------|-------|
|               |        |                       |                   |                |                | MS                        | MSD | ORGANIC | INORG |
| S - Soil      |        |                       |                   |                |                |                           |     |         |       |
| SE - Sediment |        |                       |                   |                |                |                           |     |         |       |
| SO - Solid    |        |                       |                   |                |                |                           |     |         |       |
| SL - Sludge   |        |                       |                   |                |                |                           |     |         |       |
| W - Water     |        |                       |                   |                |                |                           |     |         |       |
| O - Oil       |        |                       |                   |                |                |                           |     |         |       |
| A - Air       |        |                       |                   |                |                |                           |     |         |       |
| DS - Drum     |        |                       |                   |                |                |                           |     |         |       |
| DL - Drum     |        |                       |                   |                |                |                           |     |         |       |
| L - Liquids   |        |                       |                   |                |                |                           |     |         |       |
| EP/TCLP       |        |                       |                   |                |                |                           |     |         |       |
| Leachate      |        |                       |                   |                |                |                           |     |         |       |
| WI - Wipe     |        |                       |                   |                |                |                           |     |         |       |
| X - Other     |        |                       |                   |                |                |                           |     |         |       |
| F - Fish      |        |                       |                   |                |                |                           |     |         |       |

**FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS**

Special Instructions: **TNT, Tetra, RDB, RDX**

DATE/REVISIONS: 1. **2/20/99 changed de l to STD per SOLID**  
2. **2/20/99**  
3. **2/20/99**  
4. **2/20/99**  
5. **2/20/99**  
6. **2/20/99**

Relinquished by: **Debbie Baker** Received by: **Debbie Baker** Date: **2/15/99** Time: **9:30**

Relinquished by: **Debbie Baker** Received by: **Debbie Baker** Date: **2/15/99** Time: **9:30**

Discrepancies Between Samples Labels and COC Record: **Y** or **N**

NOTES: **(See Above)**



Roy F. Weston, Inc.  
208 Welsh Pool Road  
Lionville, Pennsylvania 19341-1333  
® 610-701-6100 • Fax 610-701-6140

## LIONVILLE ANALYTICAL LABORATORY ANALYTICAL CASE NARRATIVE

Client: COE-HOT GAS  
RFW #: 9603L267

W.O. #: 02281-012-012-9999-00  
Date Received: 01 March 1996

### EXPLOSIVE

1. The set of samples consisted of seven (7) air samples collected on 14,17,22,26 February 1996.
2. The samples and their associated QC samples were prepared on 07 March 1996 and analyzed for Explosives by methodology based on EPA Method 8330 on 09 March 1996.
3. Laboratory control limits were not available for assessing spike recoveries.

*Bruce C. Miller unit leader*  
for J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

3-13-96  
Date

cs/jkd/misc/03-267.ex

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 5 pages.

DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates spiked compound.

Explosives by HPLC / Method 8330

Work Order: 02281012012 Page: 1

REFW Batch Number: 9603L267

|          |            |              |              |              |              |              |
|----------|------------|--------------|--------------|--------------|--------------|--------------|
| Cust ID: | TRIP BLANK | XAEU20FEB96- | XAED20FEB96- | XAED12FEB96- | XAEU12FEB96- | XAEU15FEB96- |
|          |            | 3            | 3            | 1            | 1            | 2            |
| RFW#:    | 001        | 002          | 003          | 004          | 005          | 006          |
| Matrix:  | AIR        | AIR          | AIR          | AIR          | AIR          | AIR          |
| D.F.:    | 1.00       | 1.00         | 1.00         | 1.00         | 1.00         | 1.00         |
| Units:   | total ug   | total ug     | total ug     | total ug     | total ug     | total ug     |

### Sample Information

RFW#:

Matrix:

D.F.:

Units:

|                       | fl  | fl | fl  | fl | fl  |
|-----------------------|-----|----|-----|----|-----|
| RDx                   | 4.0 | U  | 4.0 | U  | 4.0 |
| Tetryl                | 3.0 | U  | 3.0 | U  | 3.0 |
| 2,4,6-Trinitrotoluene | 1.0 | U  | 1.0 | U  | 1.0 |

2,4,6-Trinitrotoluene

Cust ID: XAED15FEB96-

BLK

BLK BS

## Sample

**RFW#:**

**Matrix:**

D.F.::

**96LLC044-MB1**

AIR

1.00

total ug

|                       | fl  | fl | fl  | fl | fl   |
|-----------------------|-----|----|-----|----|------|
| RDX                   | 4.0 | U  | 4.0 | U  | 87 % |
| Tetryl                | 3.0 | U  | 3.0 | U  | 73 % |
| 2,4,6-Trinitrotoluene | 1.0 | U  | 1.0 | U  | 83 % |

2,4,6-Trinitrotoluene

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.  
%= Percent recovery. D= Diluted out I= Interference. NA= Not Applicable. \*= Outside of EPA CLP QC



Roy F. Weston, Inc. - Lionville Laboratory  
8330 ANALYTICAL DATA PACKAGE FOR  
COE-HOT GAS

DATE RECEIVED: 03/01/96

RFW LOT # :9603L267

| CLIENT ID     | RFW # | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------|-------|-----|----------|------------|-----------|----------|
| TRIP BLANK    | 001   | AI  | 96LLC044 | 02/26/96   | 03/07/96  | 03/09/96 |
| XAEU20FEB96-3 | 002   | AI  | 96LLC044 | 02/22/96   | 03/07/96  | 03/09/96 |
| XAED20FEB96-3 | 003   | AI  | 96LLC044 | 02/22/96   | 03/07/96  | 03/09/96 |
| XAED12FEB96-1 | 004   | AI  | 96LLC044 | 02/14/96   | 03/07/96  | 03/09/96 |
| XAEU12FEB96-1 | 005   | AI  | 96LLC044 | 02/14/96   | 03/07/96  | 03/09/96 |
| XAEU15FEB96-2 | 006   | AI  | 96LLC044 | 02/17/96   | 03/07/96  | 03/09/96 |
| XAED15FEB96-2 | 007   | AI  | 96LLC044 | 02/17/96   | 03/07/96  | 03/09/96 |

LAB QC:

|     |        |    |          |     |          |          |
|-----|--------|----|----------|-----|----------|----------|
| BLK | MB1    | AI | 96LLC044 | N/A | 03/07/96 | 03/09/96 |
| BLK | MB1 BS | AI | 96LLC044 | N/A | 03/07/96 | 03/09/96 |

WESTON Analytics Use Only  
910D3L267

# Custody Transfer Record/Lab Work Request

Client USAEC COE-HOTGAS  
Est. Final Proj. Sampling Date 02-28-01  
Work Order # 012-012-9999-00  
Project Contact/Phone # KAB  
AD Project Manager STO  
QC STO Del STO TAT 21 Day  
Date Rec'd 3/1/96 Date Due 3/22/96  
Account # 10540700

| MATRIX CODES:<br>S - Soil<br>SE - Sediment<br>SO - Solid<br>SL - Sludge<br>W - Water<br>O - Oil<br>A - Air<br>DS - Drum Solids<br>DL - Drum Liquids<br>L - EP/TCLP Leachate<br>WI - Wipe<br>X - Other<br>F - Fish | Lab ID | Client ID/Description | Matrix QC Chosen (✓)<br>MS MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only |     |     |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------|--------------------------------|--------|----------------|----------------|---------------------------|-----|-----|------|
|                                                                                                                                                                                                                   |        |                       |                                |        |                |                | VOA                       | BNA | PCB | Herb |
|                                                                                                                                                                                                                   | 001    | TRIP Blank            |                                | Am     | 02/24/96       | 1700           |                           |     |     |      |
|                                                                                                                                                                                                                   | 002    | XAED 20 FEB 96-3      |                                | /      | 02/24/96       | 2100           |                           |     |     |      |
|                                                                                                                                                                                                                   | 003    | XAED 20 FEB 96-3      |                                | /      | 02/24/96       | 2100           |                           |     |     |      |
|                                                                                                                                                                                                                   | 004    | XAED 12 FEB 96-1      |                                | /      | 02/14/96       | 0700           |                           |     |     |      |
|                                                                                                                                                                                                                   | 005    | XAED 12 FEB 96-1      |                                | /      | 02/14/96       | 0700           |                           |     |     |      |
|                                                                                                                                                                                                                   | 006    | XAED 15 FEB 96-2      |                                | /      | 02/17/96       | 0200           |                           |     |     |      |
|                                                                                                                                                                                                                   | 007    | XAED 15 FEB 96-2      |                                | /      | 02/17/96       | 0200           |                           |     |     |      |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: 08330 = LOX, Tetryl, TNT

DATE/REVISIONS: 1. no airbill received

WESTON Analytics Use Only

Samples were:  
1) Shipped ☒ or Hand Delivered ☒  
2) Ambient or Chilled ☒  
3) Received in Good Condition ☒  
4) Labels Indicate Properly Preserved Sample ☒  
5) Received Within Holding Times ☒  
6) Discrepancies Between Samples Labels and COC Record? Y or N ☒

COC Tape was:  
1) Present on Outer Package ☒  
2) Unbroken on Outer Package ☒  
3) Present on Sample Condition ☒  
4) Unbroken on Sample ☒  
5) COC Record Present Upon Sample Rec't ☒

|                 |             |        |      |
|-----------------|-------------|--------|------|
| Relinquished by | Received by | Date   | Time |
| D. Smith        | D. Smith    | 3/1/96 | 9:30 |

---

**APPENDIX K**

**AMBIENT AIR MONITORING RESULTS FOR ASBESTOS**

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ROY F. WESTON, INC.  
1635 PUMPHREY AVE.  
AUBURN, AL 36830  
PHONE: (334) 826-6100  
FAX: (334) 826-8232

PHASE CONTRAST MICROSCOPY RESULTS  
Weston W.O. No. 02281-012-012-9999  
Receipt Date 03/18/96 through 03/18/96

| WESTON<br>ID | CLIENT/CLIENT ID  | DATE<br>RECEIVED | VOLUME<br>(liters) | FIBER<br>COUNT | FIBERS<br>/mm <sup>2</sup> * | DETECTION<br>LIMIT | FIBERS<br>/ cc | CONFIDENCE<br>LIMITS |
|--------------|-------------------|------------------|--------------------|----------------|------------------------------|--------------------|----------------|----------------------|
| DS013        | USAEC/AAEU        | 03/18/96         | 763                | 9.0            | 10.00                        | 0.003              | 0.005          | 0.003 - 0.013        |
| DS014        | USAEC/AAED        | 03/18/96         | 830                | 1.0            | < 7.00                       | 0.003              | < 0.003        | 0.003 - 0.003        |
| DS015        | USAEC/APIS        | 03/18/96         | 102                | 3.5            | < 7.00                       | 0.026              | < 0.026        | 0.026 - 0.046        |
| DS016        | USAEC/AFIELDBLANK | 03/18/96         | 0                  | 1.0            | BLANK                        | --                 | --             | -                    |

TDTC = Too Dirty To Count    SNA = Sample Not Analyzed  
Limit of Quantification = 5.5 Fibers / 100 Fields

\* Corrected for Blank Count If Blank was Received

Results Approved for Transmittal by:

March 27, 1996

Upon issue, this report may be reproduced only in full and relates only to the items tested. Results were obtained following procedures in NIOSH 7400, Revision #3, 5/15/89. The WESTON Optical Microscopy Laboratory in Auburn, AL. is accredited by AIHA (Laboratory No. 9224).

Printed: 03/27/96 Page 1 of 1

## INDUSTRIAL HYGIENE SAMPLING DATA

| CLIENT: <u>USAEC</u><br>PROJECT LOCATION: <u>AAAP</u><br>DATE: <u>11 MAR 96</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                 | WORK ORDER: <u>02281-012-012-9999-00</u><br>SAMPLE NUMBER: <u>AAEU/LAB ID# D5013</u><br>HYGIENIST: <u>Vu Huynh</u> <u>LOT# 9-02B</u>                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------|-------------|-------------|---------------------|---------------|-----------------|-------------|------------------|---------------------|----------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|--------------|-------------------------------|--|--|--|--|--|
| PUMP CALIBRATION DATA<br>PUMP ID <u>512648</u><br>CALIBRATION METHOD<br><input type="checkbox"/> Bubble Burette <input type="checkbox"/> Critical Orifice<br><input checked="" type="checkbox"/> Precision Rotameter<br><input type="checkbox"/> Field Rotameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                 | <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Date</th> <th>C.Time</th> <th>Vol</th> <th>E.Time</th> <th>Flow</th> </tr> </thead> <tbody> <tr> <td>Initial CAL.</td> <td><u>3/11</u></td> <td><u>0730</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>1.591</u></td> </tr> <tr> <td>Final CAL.</td> <td><u>3/11</u></td> <td><u>1630</u></td> <td><u>-</u></td> <td><u>-</u></td> <td><u>1.590</u></td> </tr> <tr> <td colspan="6">MEAN FLOW: <u>1.590 L/min</u></td> </tr> </tbody> </table> |                 |                                                                                                                                                                    | Date                                                                                                                                                                            | C.Time                              | Vol             | E.Time      | Flow        | Initial CAL.        | <u>3/11</u>   | <u>0730</u>     | <u>-</u>    | <u>-</u>         | <u>1.591</u>        | Final CAL.     | <u>3/11</u> | <u>1630</u>                                                                                                                                                                                                 | <u>-</u> | <u>-</u> | <u>1.590</u> | MEAN FLOW: <u>1.590 L/min</u> |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Date                                                                                                                                                                            | C.Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Vol             | E.Time                                                                                                                                                             | Flow                                                                                                                                                                            |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| Initial CAL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <u>3/11</u>                                                                                                                                                                     | <u>0730</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <u>-</u>        | <u>-</u>                                                                                                                                                           | <u>1.591</u>                                                                                                                                                                    |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| Final CAL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>3/11</u>                                                                                                                                                                     | <u>1630</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <u>-</u>        | <u>-</u>                                                                                                                                                           | <u>1.590</u>                                                                                                                                                                    |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| MEAN FLOW: <u>1.590 L/min</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| SAMPLING MEDIA<br><input type="checkbox"/> Adsorption Tube <input checked="" type="checkbox"/> Cassette <input type="checkbox"/> Other<br><div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input type="checkbox"/> Charcoal<br/> <input type="checkbox"/> Tenax<br/> <input type="checkbox"/> Silica         </div> <div style="width: 30%;"> <input type="checkbox"/> 37 mm      <input checked="" type="checkbox"/> 0.8 µm<br/> <input type="checkbox"/> 25 mm      <input type="checkbox"/> 0.4 µm<br/> <input type="checkbox"/> MCE      <input type="checkbox"/> Open Face<br/> <input type="checkbox"/> PVC      <input type="checkbox"/> Std. Bowl         </div> <div style="width: 30%; border-top: 1px solid black;"></div> </div> |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| SAMPLE TYPE<br><input checked="" type="checkbox"/> Ambient <input type="checkbox"/> Personnel <input type="checkbox"/> TWA Sample <input type="checkbox"/> Other<br><div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input checked="" type="checkbox"/> Work Area<br/> <input type="checkbox"/> Adjacent RM<br/> <input type="checkbox"/> Background         </div> <div style="width: 30%;">           Name: _____<br/>           ID #: _____<br/>           Task: _____         </div> <div style="width: 30%;"></div> </div>                                                                                                                                                                                                              |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| PUMP OPERATION<br>START TIME: <u>0800</u> 2ND START: _____      TOTAL TIME: <u>480 minutes</u><br>STOP TIME: <u>1600</u> 2ND STOP: _____      VOLUME: <u>763 L</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| <table style="width:100%;"> <tr> <td style="width: 33%; vertical-align: top;">           SAMPLE MANAGEMENT<br/>           HANDLING<br/> <input type="checkbox"/> Cold Storage<br/> <input type="checkbox"/> Vibration Sensitive<br/> <input type="checkbox"/> Hand Carry Only         </td> <td style="width: 33%; vertical-align: top;">           ANALYTICS<br/> <input checked="" type="checkbox"/> NIOSH Method <u>7400</u> <u>Asbestos</u><br/> <input type="checkbox"/> OSHA Method _____<br/> <input type="checkbox"/> Other _____         </td> <td style="width: 33%; vertical-align: top;">           ANALYTES<br/>           _____<br/>           _____<br/>           _____         </td> </tr> </table>                                                                |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 | SAMPLE MANAGEMENT<br>HANDLING<br><input type="checkbox"/> Cold Storage<br><input type="checkbox"/> Vibration Sensitive<br><input type="checkbox"/> Hand Carry Only | ANALYTICS<br><input checked="" type="checkbox"/> NIOSH Method <u>7400</u> <u>Asbestos</u><br><input type="checkbox"/> OSHA Method _____<br><input type="checkbox"/> Other _____ | ANALYTES<br>_____<br>_____<br>_____ |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| SAMPLE MANAGEMENT<br>HANDLING<br><input type="checkbox"/> Cold Storage<br><input type="checkbox"/> Vibration Sensitive<br><input type="checkbox"/> Hand Carry Only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ANALYTICS<br><input checked="" type="checkbox"/> NIOSH Method <u>7400</u> <u>Asbestos</u><br><input type="checkbox"/> OSHA Method _____<br><input type="checkbox"/> Other _____ | ANALYTES<br>_____<br>_____<br>_____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| CHAIN OF CUSTODY<br><table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>RECEIVED BY</th> <th>RELINQUISHED BY</th> <th>DATE</th> <th>TIME</th> </tr> </thead> <tbody> <tr> <td><u>Vu Huynh</u></td> <td><u>Vu Huynh</u></td> <td><u>3/11</u></td> <td><u>1800</u></td> </tr> <tr> <td><u>Shamir Blair</u></td> <td><u>FEO Ex</u></td> <td><u>03-13-96</u></td> <td><u>1600</u></td> </tr> <tr> <td><u>A. MURPHY</u></td> <td><u>Brian Benson</u></td> <td><u>3-18-96</u></td> <td><u>1000</u></td> </tr> </tbody> </table>                                                                                                                                                                                                                            |                                                                                                                                                                                 | RECEIVED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | RELINQUISHED BY | DATE                                                                                                                                                               | TIME                                                                                                                                                                            | <u>Vu Huynh</u>                     | <u>Vu Huynh</u> | <u>3/11</u> | <u>1800</u> | <u>Shamir Blair</u> | <u>FEO Ex</u> | <u>03-13-96</u> | <u>1600</u> | <u>A. MURPHY</u> | <u>Brian Benson</u> | <u>3-18-96</u> | <u>1000</u> | LABORATORY<br><input type="checkbox"/> AUBURN IH LAB<br>ROY F. WESTON INC.<br>1633 PUMPHREY AVE.<br>AUBURN, AL 36830<br>ATTN: BRIAN BENSON<br><input checked="" type="checkbox"/> OTHER<br><u>Lionville</u> |          |          |              |                               |  |  |  |  |  |
| RECEIVED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | RELINQUISHED BY                                                                                                                                                                 | DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | TIME            |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| <u>Vu Huynh</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <u>Vu Huynh</u>                                                                                                                                                                 | <u>3/11</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <u>1800</u>     |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| <u>Shamir Blair</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <u>FEO Ex</u>                                                                                                                                                                   | <u>03-13-96</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <u>1600</u>     |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |
| <u>A. MURPHY</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <u>Brian Benson</u>                                                                                                                                                             | <u>3-18-96</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <u>1000</u>     |                                                                                                                                                                    |                                                                                                                                                                                 |                                     |                 |             |             |                     |               |                 |             |                  |                     |                |             |                                                                                                                                                                                                             |          |          |              |                               |  |  |  |  |  |

## INDUSTRIAL HYGIENE SAMPLING DATA

|                               |                                                              |
|-------------------------------|--------------------------------------------------------------|
| CLIENT: <u>USAEC</u>          | WORK ORDER: <u>02281-012.012-9999-00</u>                     |
| PROJECT LOCATION: <u>AAAP</u> | SAMPLE NUMBER: <u>AAED/LAB ID# D8014</u><br><u>LOT#9-028</u> |
| DATE: <u>11 MAR 96</u>        | HYGIENIST: <u>Vu Thanh</u>                                   |

## PUMP CALIBRATION DATA

PUMP ID 512848

## CALIBRATION METHOD

☐ Bubble Burette☐ Critical Orifice☒ Precision Rotameter☐ Field Rotameter

|                               | Date | C.Time | Vol | E.Time | Flow  |
|-------------------------------|------|--------|-----|--------|-------|
| Initial CAL.                  | 3/11 | 0730   | -   | -      | 1.731 |
| Final CAL.                    | 3/11 | 1630   | -   | -      | 1.730 |
| MEAN FLOW: <u>1.730 L/min</u> |      |        |     |        |       |

## SAMPLING MEDIA

☐ Adsorption Tube☒ Cassette☐ Other☐ Charcoal☐ 37 mm☒ 0.8  $\mu$ m☐ Tenax☐ 25 mm☐ 0.4  $\mu$ m☐ Silica☐ MCE☐ Open Face☐ PVC☐ Std. Cowl

## SAMPLE TYPE

☒ Ambient☐ Personnel☐ TWA Sample☐ Other☒ Work Area☐ Adjacent RM☐ Background

Name: \_\_\_\_\_

ID #: \_\_\_\_\_

Task: \_\_\_\_\_

## PUMP OPERATION

START TIME: 0800

2ND START:

TOTAL TIME: 480 minSTOP TIME: 1600

2ND STOP:

VOLUME: 830 Liters

## SAMPLE MANAGEMENT

## HANDLING

☐ Cold Storage☐ Vibration Sensitive☐ Hand Carry Only

## ANALYTICS

☒ NIOSH Method 7400 Sheets☐ OSHA Method \_\_\_\_\_☐ Other \_\_\_\_\_

## ANALYTES

## CHAIN OF CUSTODY

| RECEIVED BY          | RELINQUISHED BY     | DATE            | TIME        |
|----------------------|---------------------|-----------------|-------------|
| <u>Vu Thanh</u>      | <u>Vu Thanh</u>     | <u>3/11</u>     | <u>1800</u> |
| <u>Shannon Blair</u> | <u>FED EX</u>       | <u>03-13-96</u> | <u>1600</u> |
| <u>Murph</u>         | <u>Brian Benson</u> | <u>3-18-96</u>  | <u>1000</u> |

## LABORATORY

☐ AUBURN IH LABROY F. WESTON INC.  
1635 PUMPHREY AVE.  
AUBURN, AL 36830  
ATTN: BRIAN BENSON☒ OTHERLionville

APIS

## SAMPLING MEDIA

☐ Adsorption Tube

☐ Charcoal

☐ Tenax

☐ Silica

☒ Cassette

☐ 37 mm

☐ 25 mm

☐ MCE

☐ PVC

☒ 0.8  $\mu$ m

☐ 0.4  $\mu$ m

☐ Open Face

☐ Std. Bowl

☐ Other \_\_\_\_\_

— **NOLE TYPE**

☐ Ambient  
☐ Work Area  
☐ Adjacent RM  
☐ Background

☒ Personnel  
Name: Kerim Ahmedist

☐ TWA Sample  
ID #: \_\_\_\_\_

☐ Other  
Task: \_\_\_\_\_

|                  |            |                        |  |
|------------------|------------|------------------------|--|
| PUMP OPERATION   |            | TOTAL TIME: 60 minutes |  |
| START TIME: 1800 | 2ND START: | VOLUME: 102 Liters     |  |
| STOP TIME: 0900  | 2ND STOP:  |                        |  |

| SAMPLE MANAGEMENT                            |  | ANALYTICS                                        |             | ANALYTES        |  |
|----------------------------------------------|--|--------------------------------------------------|-------------|-----------------|--|
| HANDLING                                     |  |                                                  |             |                 |  |
| <input type="checkbox"/> Cold Storage        |  | <input checked="" type="checkbox"/> NIOSH Method | <u>7400</u> | <u>Asbestos</u> |  |
| <input type="checkbox"/> Vibration Sensitive |  | <input type="checkbox"/> OSHA Method             |             |                 |  |
| <input type="checkbox"/> Hand Carry Only     |  | <input type="checkbox"/> Other                   |             |                 |  |

| CHAIN OF CUSTODY |                 |          |      | LABORATORY                                                                                                                   |
|------------------|-----------------|----------|------|------------------------------------------------------------------------------------------------------------------------------|
| RECEIVED BY      | RELINQUISHED BY | DATE     | TIME |                                                                                                                              |
| Va Hrynah        | Va Hrynah       | 03/11    | 1800 | <input type="checkbox"/> AUBURN IH LAB<br>ROY F. WESTON INC.<br>1635 PUMPHREY AVE.<br>AUBURN, AL 36830<br>ATTN: BRIAN BENSON |
| Shannon Blair    | FED EX          | 03-13-96 | 1600 |                                                                                                                              |
| A. Murph         | Brian Benson    | 3-18-96  | 1000 |                                                                                                                              |

☒ OTHER  
 Libbville

SV:C:\INDHYG\HDATA.FRM

\*Note This C.O.C.'s information does not belong with any of the four canisters sent. Also, one of the four canisters is missing a C.O.C.

## INDUSTRIAL HYGIENE SAMPLING DATA

| CLIENT: <u>USAE C</u><br>PROJECT LOCATION: <u>AAAP</u><br>DATE: <u>03/11/96</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                             | WORK ORDER: <u>02281-012-012-9999-00</u><br>SAMPLE NUMBER: <u>A FIELD BLANK</u><br>LAB ID# <u>DS016</u><br>LOT# <u>9-02B</u><br>HYGIENIST:                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------|---------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------|-----------------|---------------|-----------------|---------------------|----------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------|--------------------------|--|--|--|--|--|
| PUMP CALIBRATION DATA<br><br>PUMP ID <u>      </u><br><br>CALIBRATION METHOD<br><input type="checkbox"/> Bubble Burette <input type="checkbox"/> Critical Orifice<br><input type="checkbox"/> Precision Rotameter<br><input type="checkbox"/> Field Rotameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                             | <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Date</th> <th>C.Time</th> <th>Vol</th> <th>E.Time</th> <th>Flow</th> </tr> </thead> <tbody> <tr> <td>Initial CAL.</td> <td><u>      </u></td> <td><u>      </u></td> <td><u>      </u></td> <td><u>      </u></td> <td><u>      </u></td> </tr> <tr> <td>Final CAL.</td> <td><u>      </u></td> <td><u>      </u></td> <td><u>      </u></td> <td><u>      </u></td> <td><u>      </u></td> </tr> <tr> <td colspan="6">MEAN FLOW: <u>      </u></td> </tr> </tbody> </table> |                 |                            | Date          | C.Time          | Vol                                                                                                                               | E.Time                                                                                                                                                                                                                      | Flow                                                                                                                          | Initial CAL.         | <u>      </u> | <u>      </u>   | <u>      </u> | <u>      </u>   | <u>      </u>       | Final CAL.     | <u>      </u> | <u>      </u>                                                                                                                                                                                                       | <u>      </u> | <u>      </u> | <u>      </u> | MEAN FLOW: <u>      </u> |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date                                                                                                                                                                                                                        | C.Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Vol             | E.Time                     | Flow          |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| Initial CAL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <u>      </u>                                                                                                                                                                                                               | <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <u>      </u>   | <u>      </u>              | <u>      </u> |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| Final CAL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <u>      </u>                                                                                                                                                                                                               | <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <u>      </u>   | <u>      </u>              | <u>      </u> |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| MEAN FLOW: <u>      </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| SAMPLING MEDIA<br><br><div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Adsorption Tube<br/> <input type="checkbox"/> Charcoal<br/> <input type="checkbox"/> Tenax<br/> <input checked="" type="checkbox"/> Silica         </div> <div> <input checked="" type="checkbox"/> Cassette<br/> <input type="checkbox"/> 37 mm    <input checked="" type="checkbox"/> 0.8 µm<br/> <input type="checkbox"/> 25 mm    <input type="checkbox"/> 0.4 µm<br/> <input type="checkbox"/> MCE       <input type="checkbox"/> Open Face<br/> <input type="checkbox"/> PVC        <input type="checkbox"/> Std. Cowl         </div> <div> <input type="checkbox"/> Other<br/> <u>                                </u> </div> </div>                                                            |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| SAMPLE TYPE<br><br><div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Ambient<br/> <input type="checkbox"/> Work Area<br/> <input type="checkbox"/> Adjacent RM<br/> <input type="checkbox"/> Background         </div> <div> <input type="checkbox"/> Personnel<br/>           Name: <u>                                </u><br/>           ID #: <u>                                </u><br/>           Task: <u>                                </u> </div> <div> <input type="checkbox"/> TWA Sample<br/> <input checked="" type="checkbox"/> Other<br/> <u>Field Blank</u> </div> </div>                                                                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| PUMP OPERATION<br><div style="display: flex; justify-content: space-between;"> <div>           START TIME: <u>      </u><br/>           STOP TIME: <u>      </u> </div> <div>           2ND START: <u>      </u><br/>           2ND STOP: <u>      </u> </div> <div>           TOTAL TIME: <u>      </u><br/>           VOLUME: <u>      </u> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">SAMPLE MANAGEMENT HANDLING</th> <th style="width: 33%;">ANALYTICS</th> <th style="width: 34%;">ANALYTES</th> </tr> </thead> <tbody> <tr> <td> <input type="checkbox"/> Cold Storage<br/> <input type="checkbox"/> Vibration Sensitive<br/> <input type="checkbox"/> Hand Carry Only         </td> <td> <input type="checkbox"/> NIOSH Method <u>7400</u> <u>Asbestos</u><br/> <input type="checkbox"/> OSHA Method <u>                                </u><br/> <input type="checkbox"/> Other <u>                                </u> </td> <td> <u>                                </u><br/> <u>                                </u><br/> <u>                                </u> </td> </tr> </tbody> </table> |                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 | SAMPLE MANAGEMENT HANDLING | ANALYTICS     | ANALYTES        | <input type="checkbox"/> Cold Storage<br><input type="checkbox"/> Vibration Sensitive<br><input type="checkbox"/> Hand Carry Only | <input type="checkbox"/> NIOSH Method <u>7400</u> <u>Asbestos</u><br><input type="checkbox"/> OSHA Method <u>                                </u><br><input type="checkbox"/> Other <u>                                </u> | <u>                                </u><br><u>                                </u><br><u>                                </u> |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| SAMPLE MANAGEMENT HANDLING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ANALYTICS                                                                                                                                                                                                                   | ANALYTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| <input type="checkbox"/> Cold Storage<br><input type="checkbox"/> Vibration Sensitive<br><input type="checkbox"/> Hand Carry Only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> NIOSH Method <u>7400</u> <u>Asbestos</u><br><input type="checkbox"/> OSHA Method <u>                                </u><br><input type="checkbox"/> Other <u>                                </u> | <u>                                </u><br><u>                                </u><br><u>                                </u>                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| CHAIN OF CUSTODY<br><table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>RECEIVED BY</th> <th>RELINQUISHED BY</th> <th>DATE</th> <th>TIME</th> </tr> </thead> <tbody> <tr> <td><u>Vu Huynh</u></td> <td><u>Vu Huynh</u></td> <td><u>03/11/96</u></td> <td><u>1800</u></td> </tr> <tr> <td><u>Shannon Blair</u></td> <td><u>FED EX</u></td> <td><u>03-13-96</u></td> <td><u>1600</u></td> </tr> <tr> <td><u>A. Murph</u></td> <td><u>Brian Benson</u></td> <td><u>3-18-96</u></td> <td><u>1000</u></td> </tr> </tbody> </table>                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                             | RECEIVED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | RELINQUISHED BY | DATE                       | TIME          | <u>Vu Huynh</u> | <u>Vu Huynh</u>                                                                                                                   | <u>03/11/96</u>                                                                                                                                                                                                             | <u>1800</u>                                                                                                                   | <u>Shannon Blair</u> | <u>FED EX</u> | <u>03-13-96</u> | <u>1600</u>   | <u>A. Murph</u> | <u>Brian Benson</u> | <u>3-18-96</u> | <u>1000</u>   | LABORATORY<br><br><input type="checkbox"/> AUBURN IH LAB<br>ROY F. WESTON INC.<br>1633 PUMPHREY AVE.<br>AUBURN, AL 36830<br>ATTN: BRIAN BENSON<br><br><input checked="" type="checkbox"/> OTHER<br><u>Lionville</u> |               |               |               |                          |  |  |  |  |  |
| RECEIVED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | RELINQUISHED BY                                                                                                                                                                                                             | DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TIME            |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| <u>Vu Huynh</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>Vu Huynh</u>                                                                                                                                                                                                             | <u>03/11/96</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>1800</u>     |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| <u>Shannon Blair</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <u>FED EX</u>                                                                                                                                                                                                               | <u>03-13-96</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <u>1600</u>     |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |
| <u>A. Murph</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>Brian Benson</u>                                                                                                                                                                                                         | <u>3-18-96</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <u>1000</u>     |                            |               |                 |                                                                                                                                   |                                                                                                                                                                                                                             |                                                                                                                               |                      |               |                 |               |                 |                     |                |               |                                                                                                                                                                                                                     |               |               |               |                          |  |  |  |  |  |



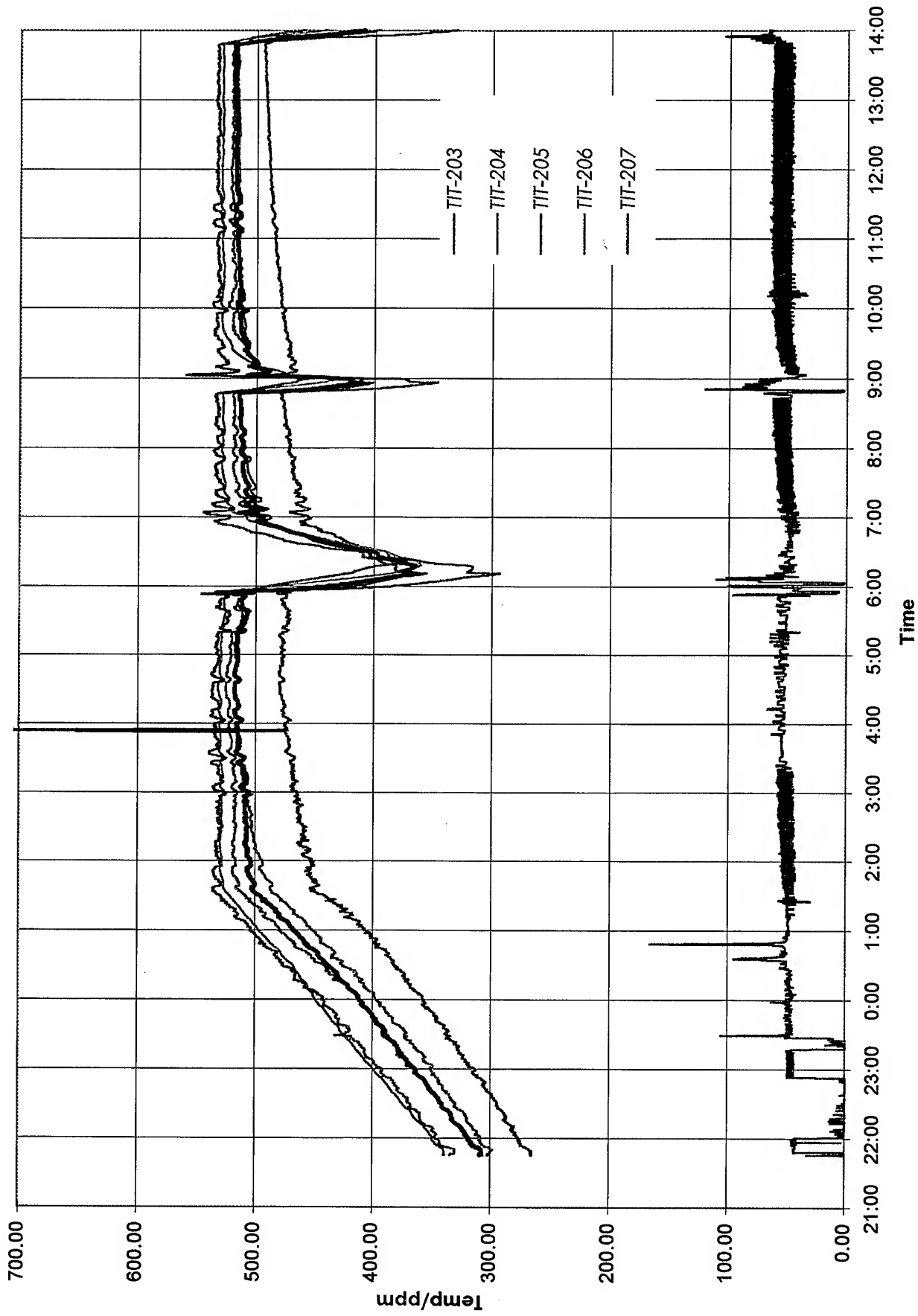
---

**APPENDIX L**

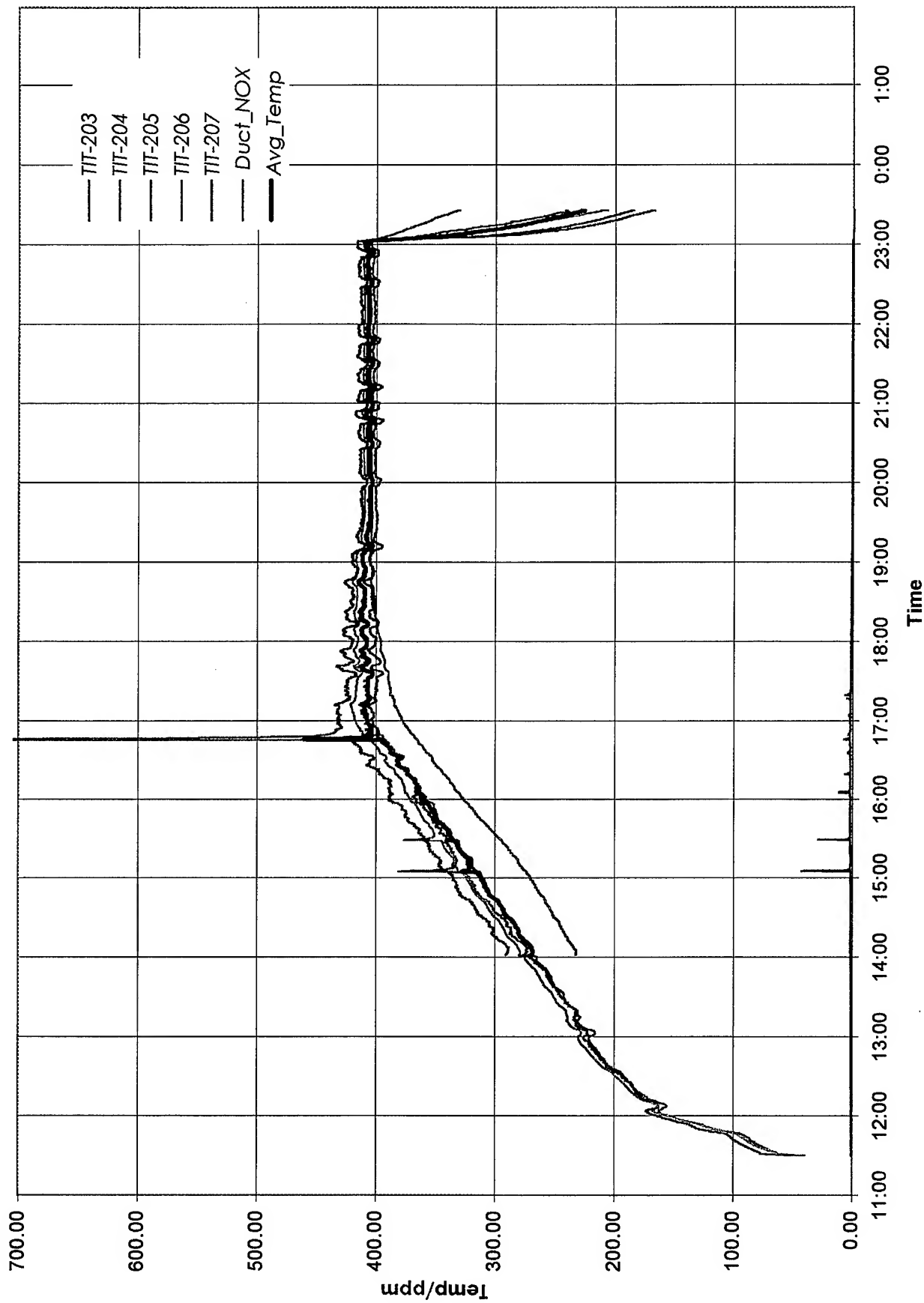
**NO<sub>x</sub> EMISSIONS TRENDS IN THE FURNACE EXIT  
GASES FOR TEST RUNS 1-15**

---

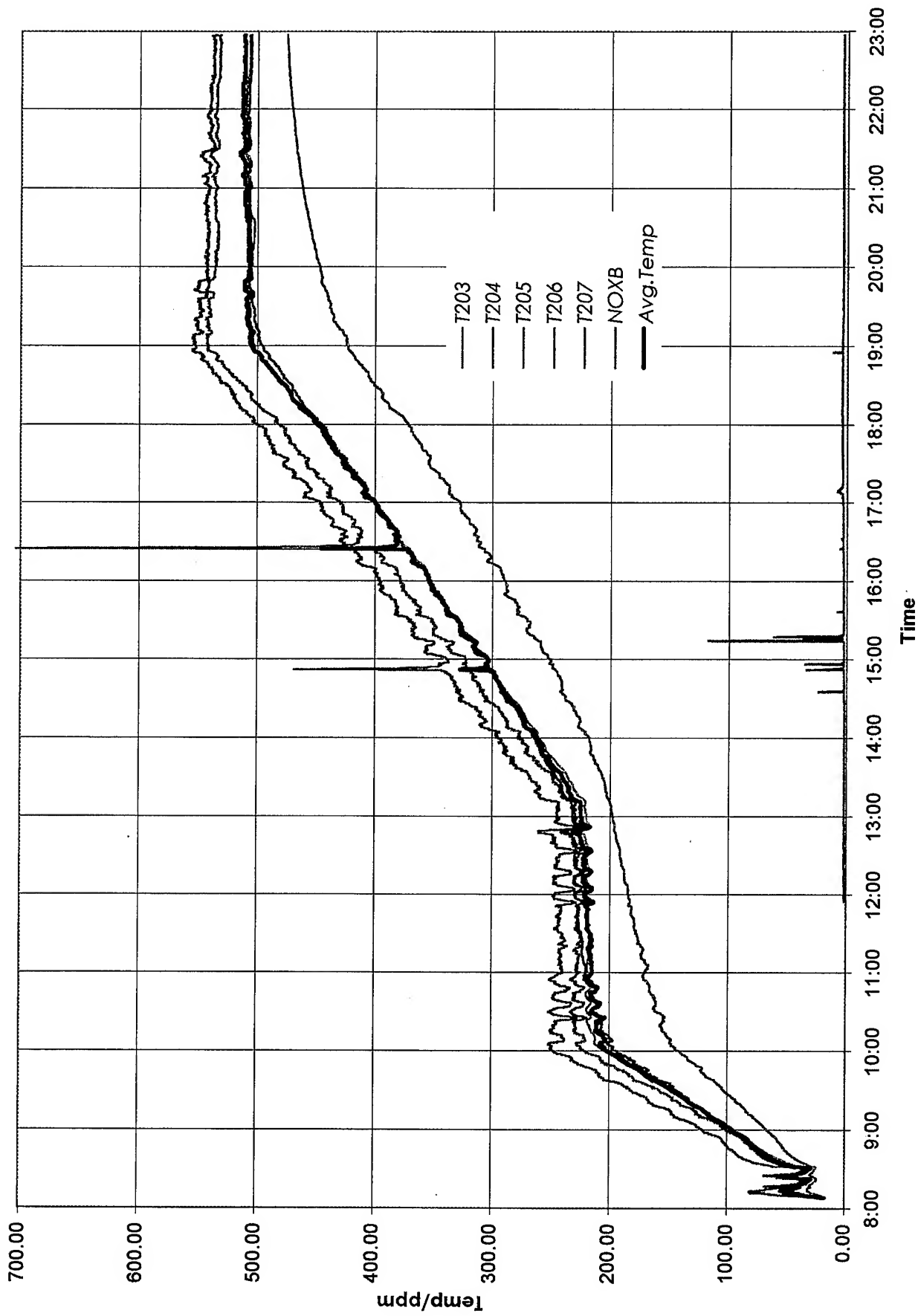
# TEST#1: NOx and Temperature



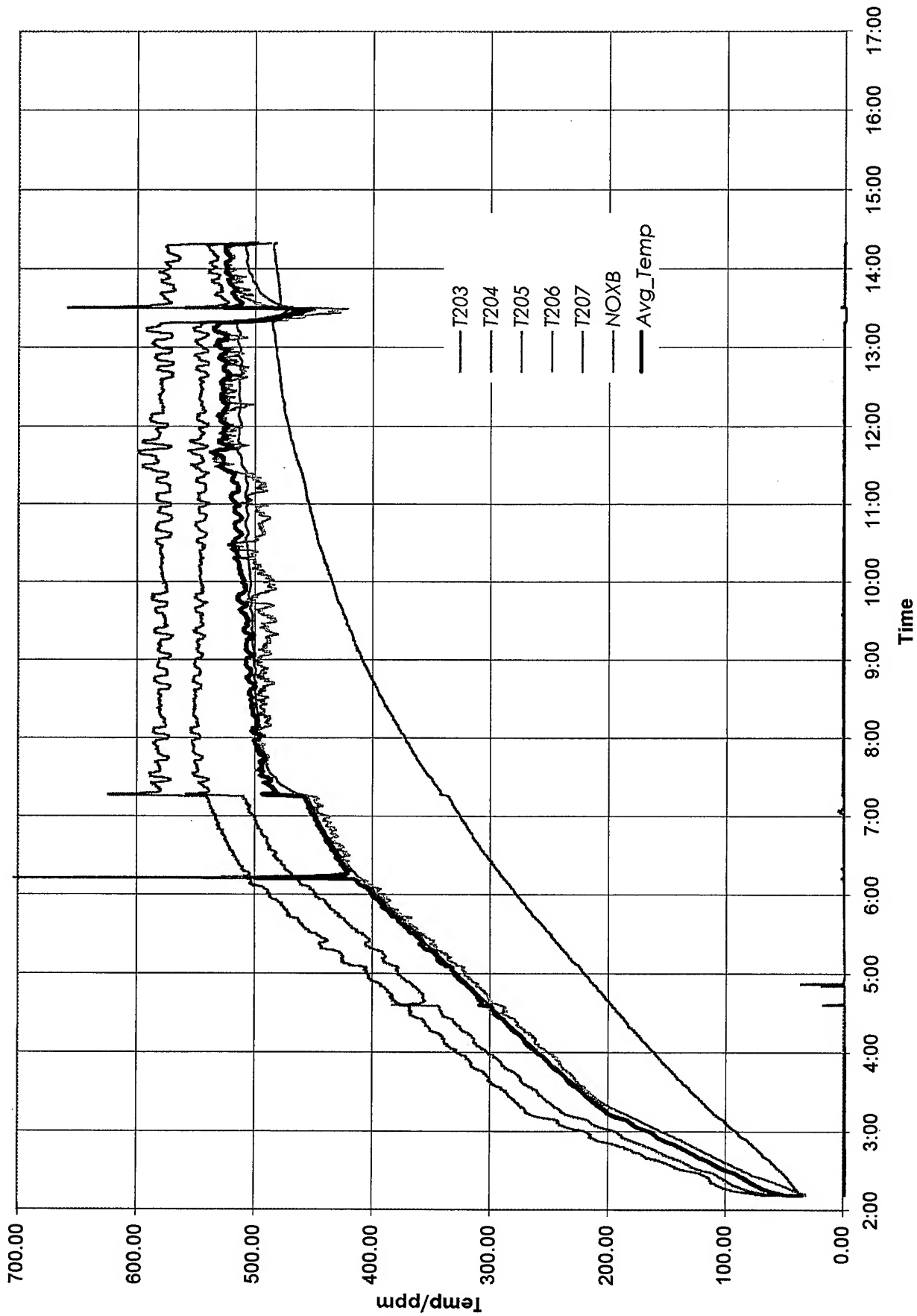
# TEST#2: NOx and Temperature



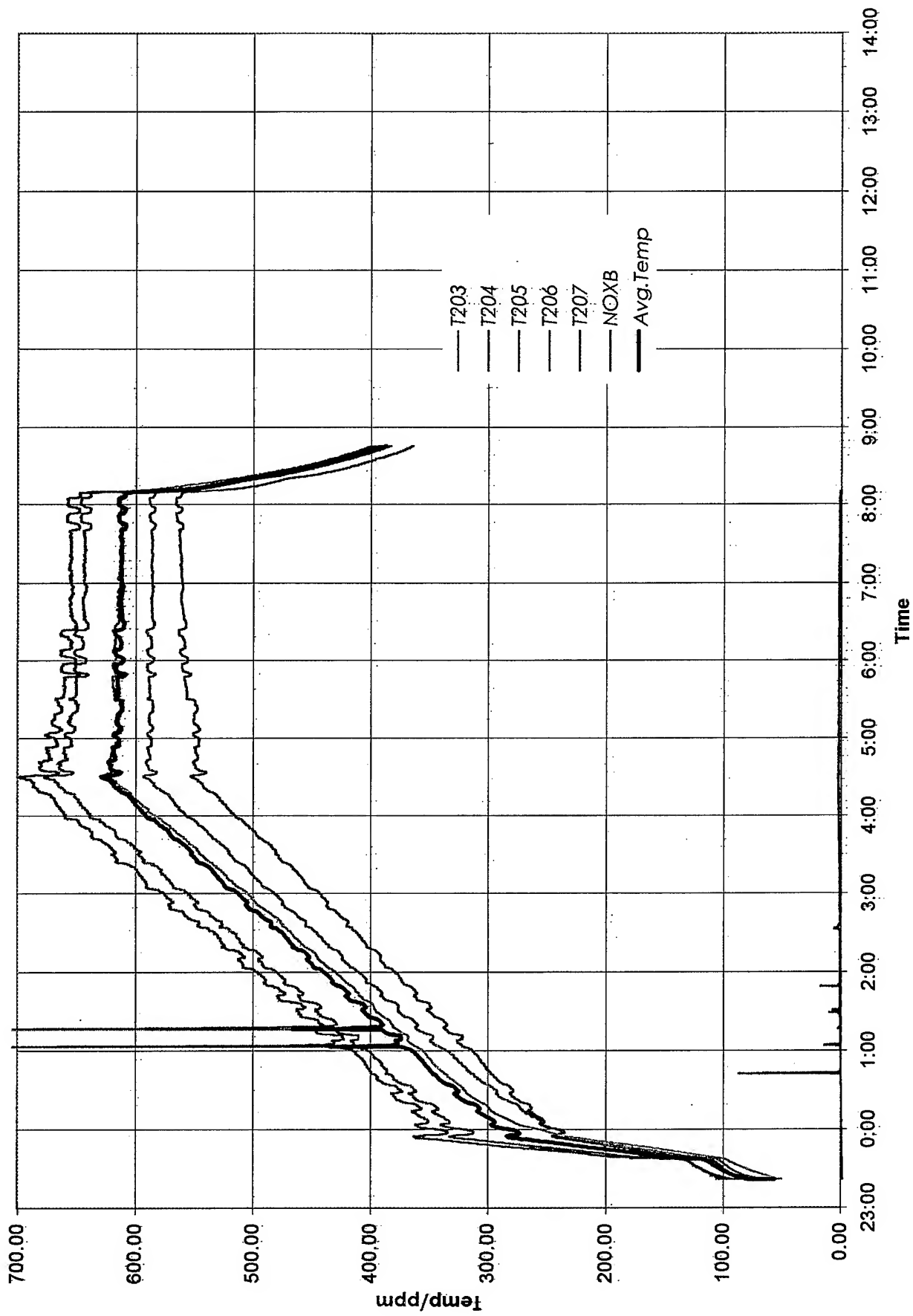
# TEST#3: NOx and Temperature



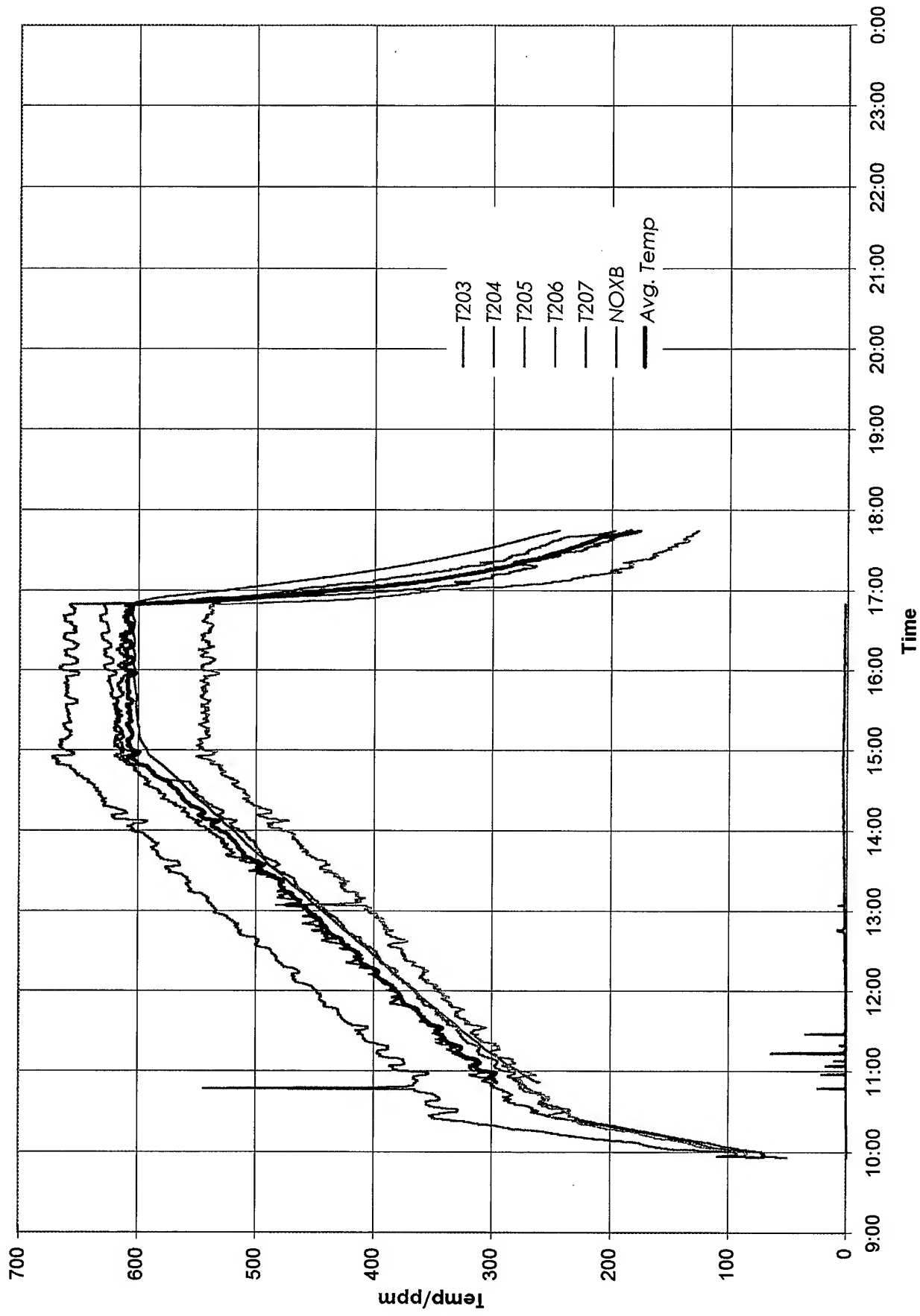
# TEST#4: NOx and Temperature



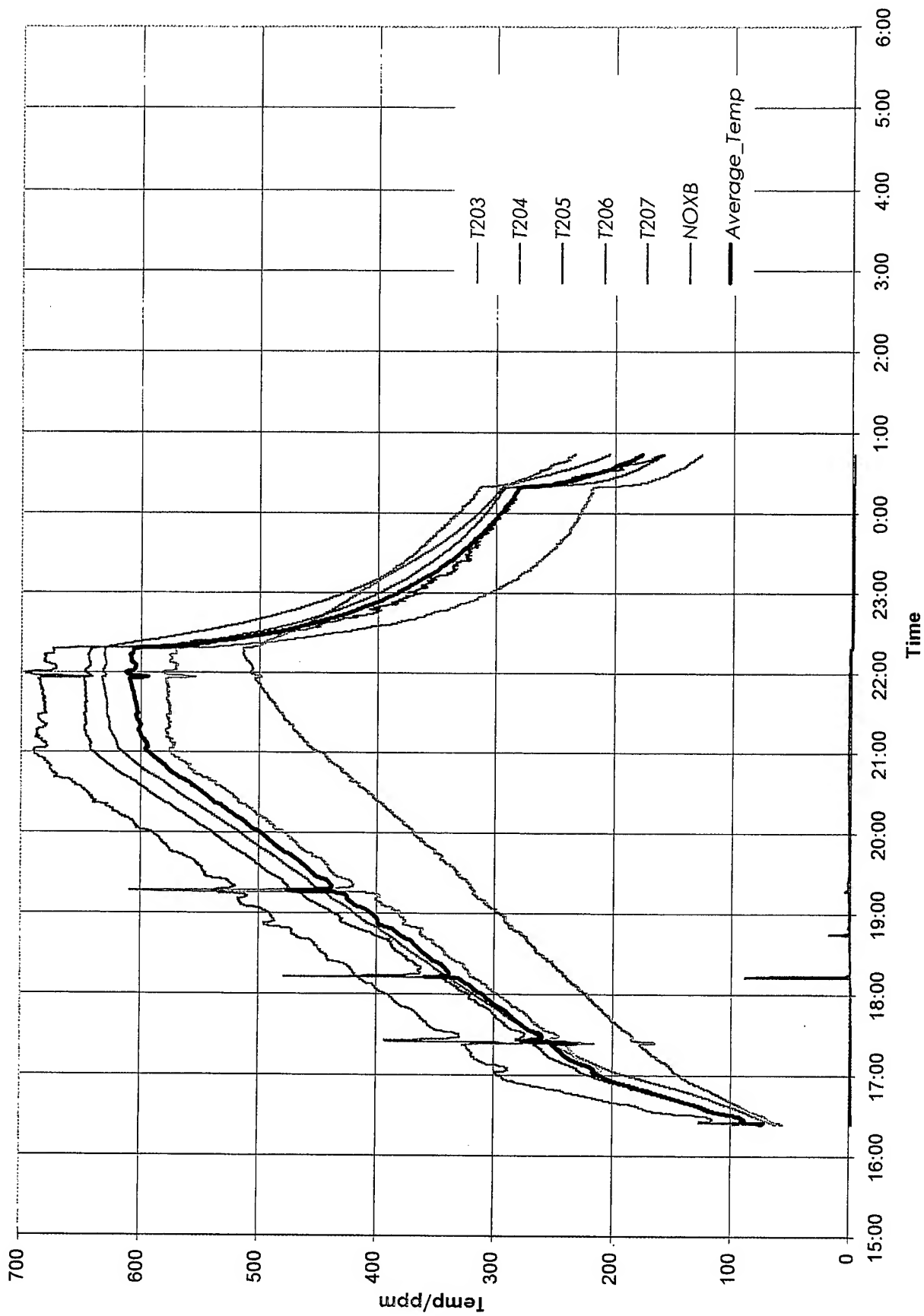
# TEST#5: NOx and Temperature



# TEST#6: NOx and Temperature

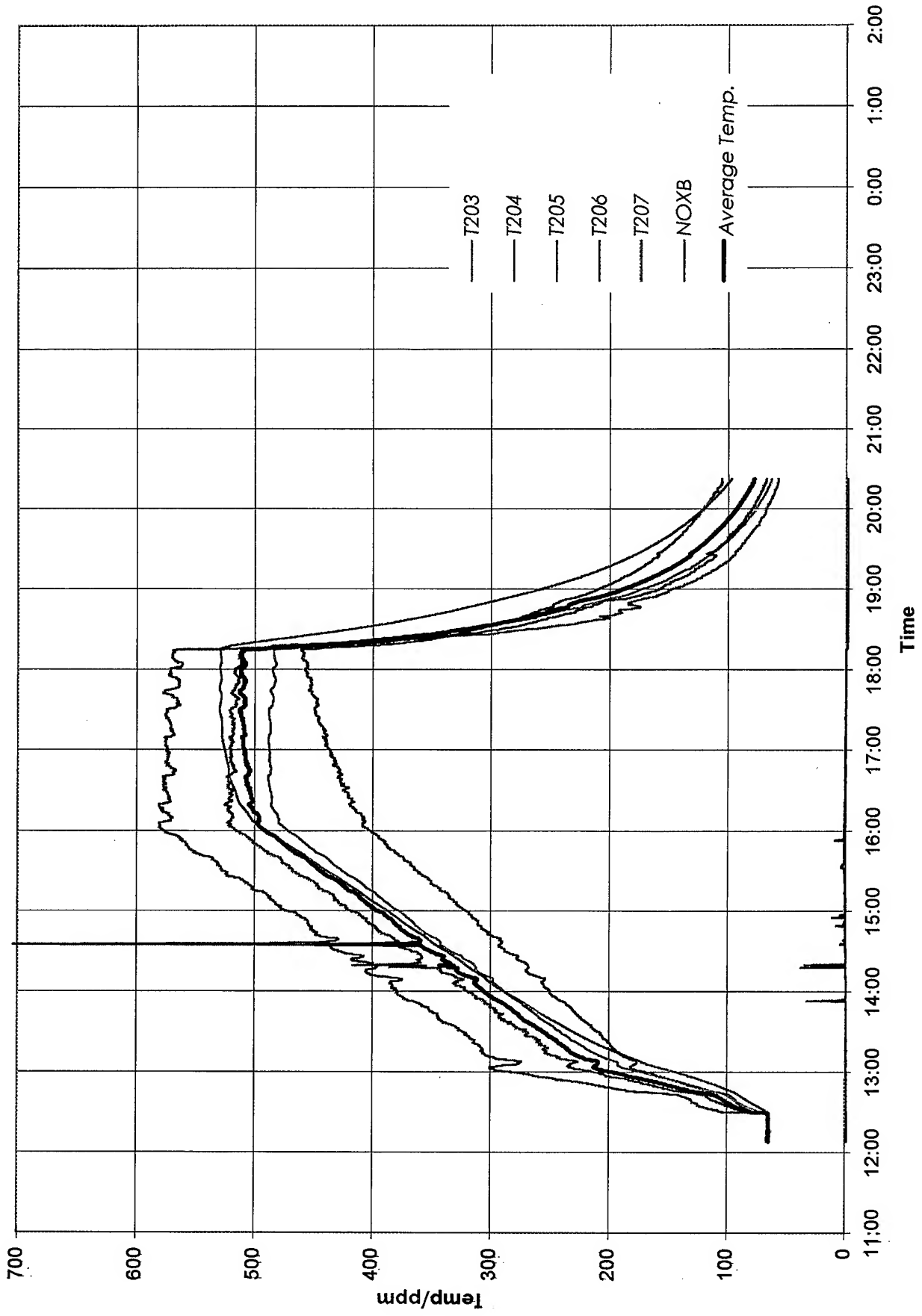


# TEST#7: NOx and Temperature

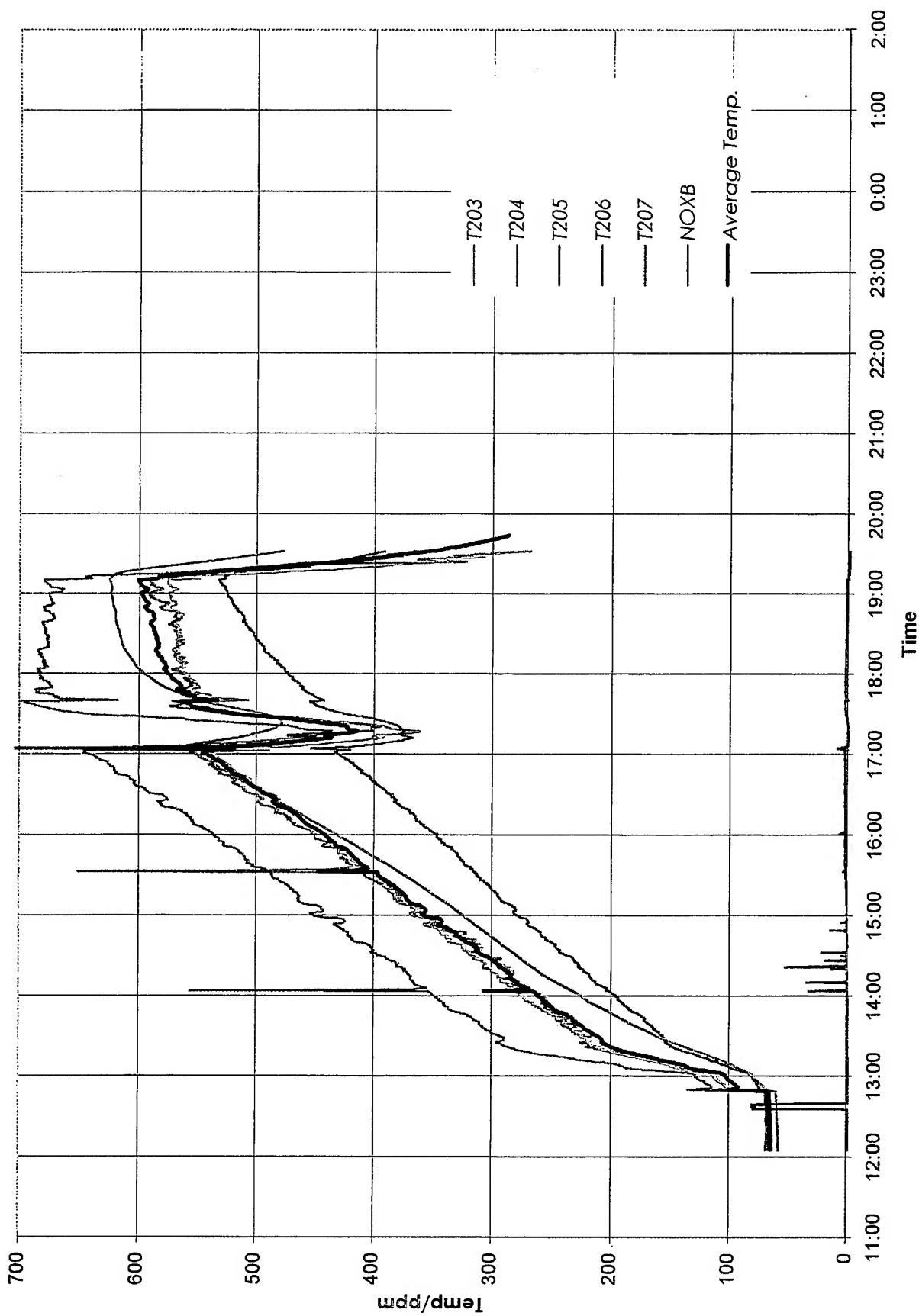




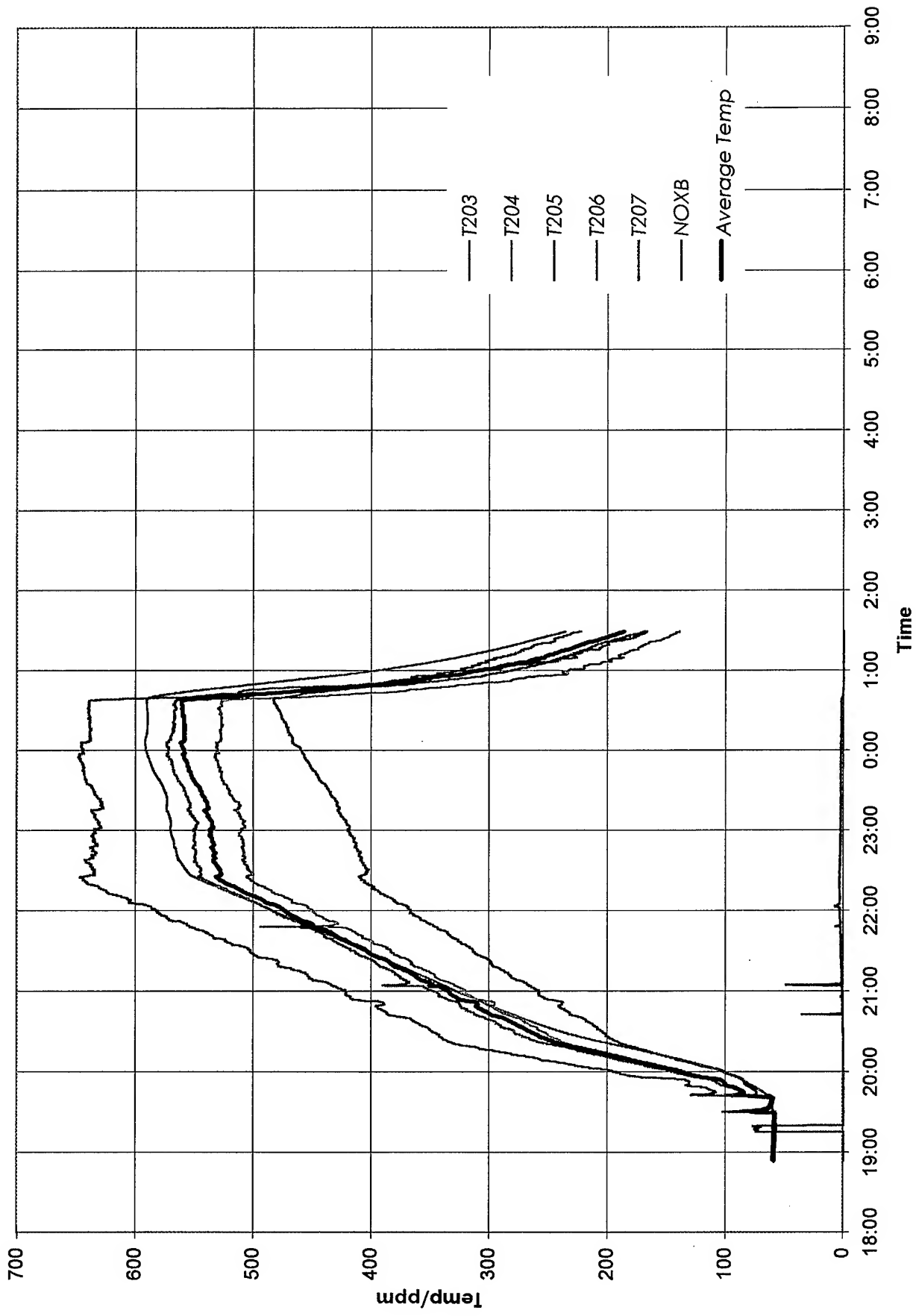
TEST#8: NOx and Temperature



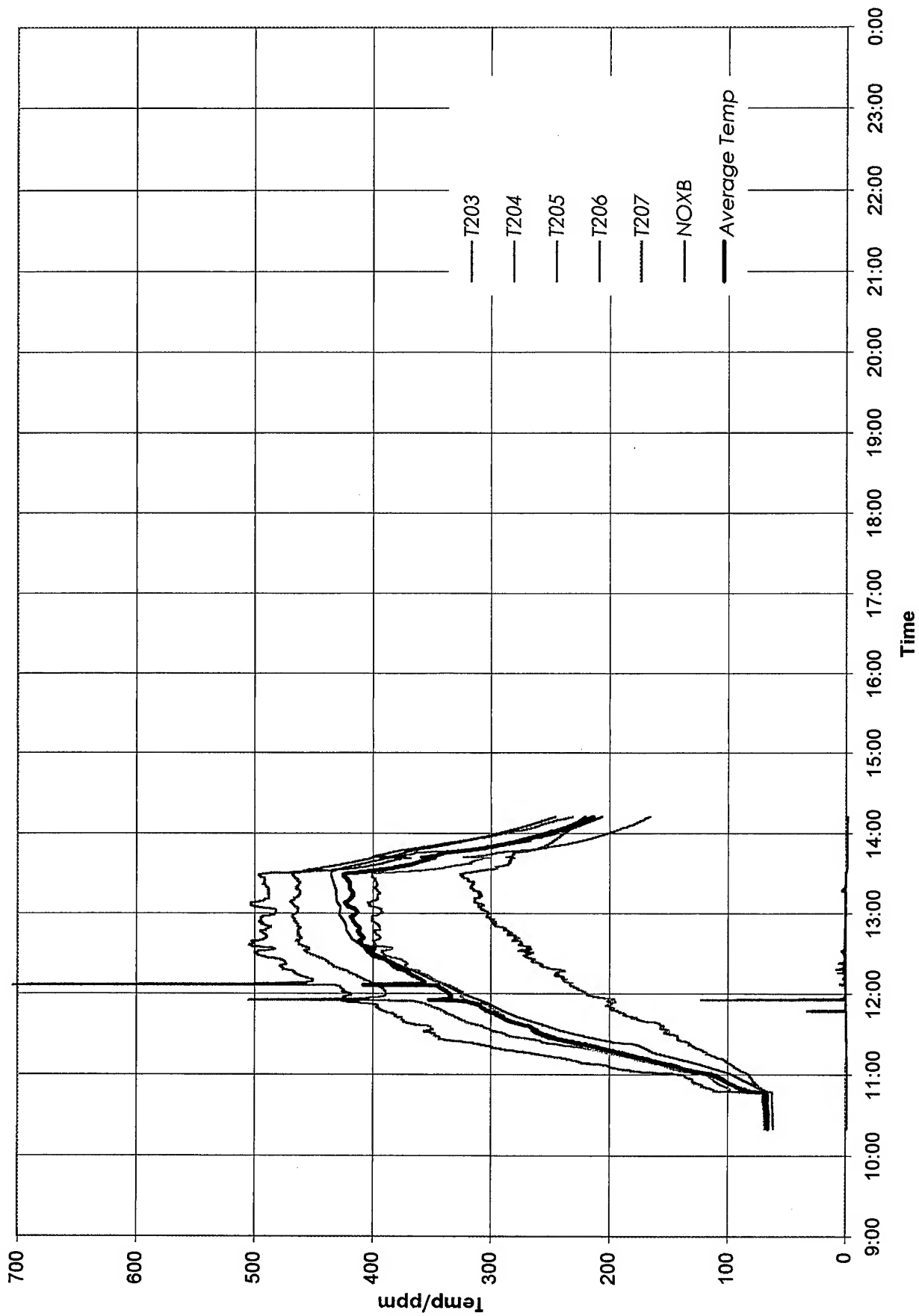
# TEST#9: NOx and Temperature



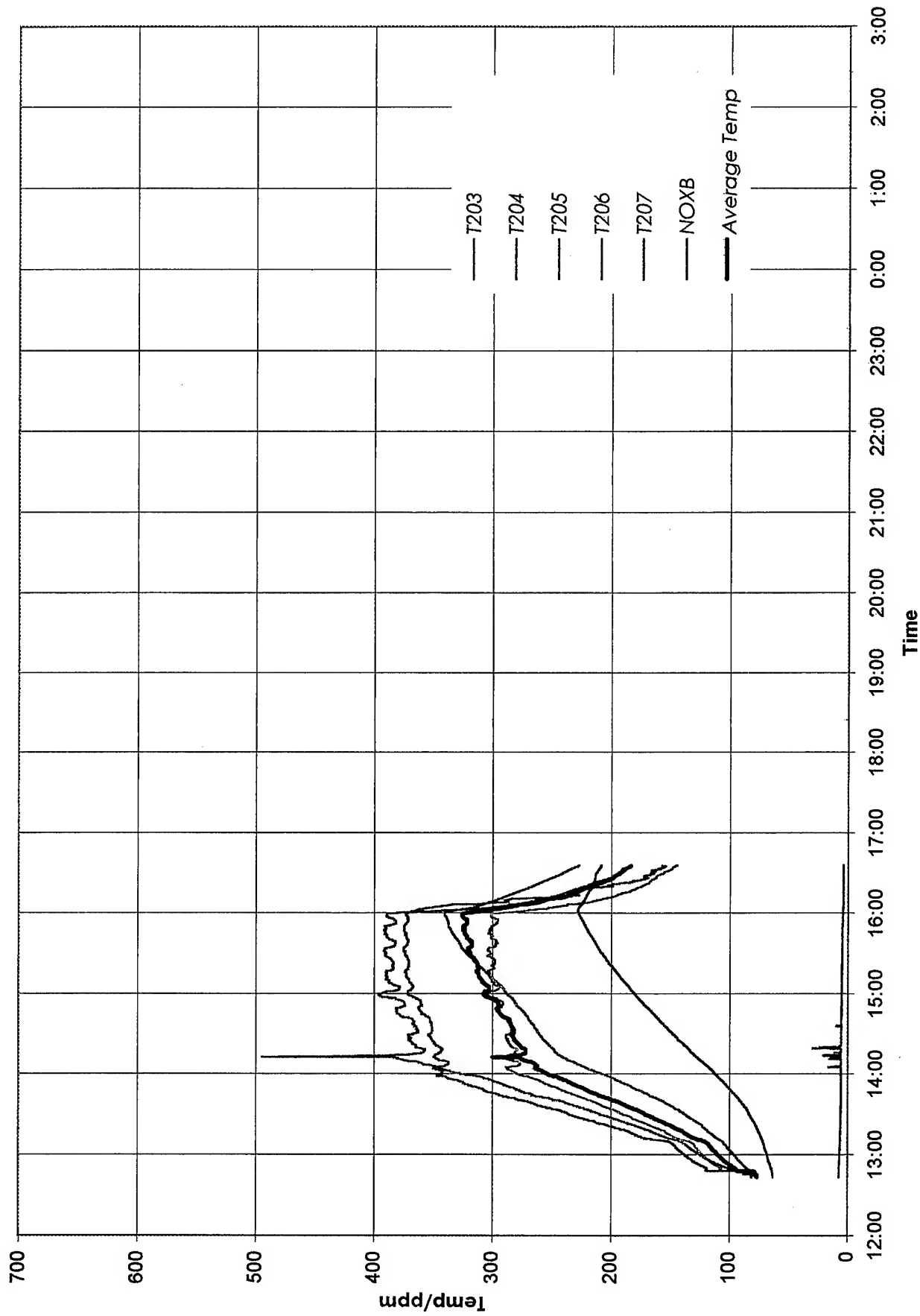
# TEST#10: NOx and Temperature



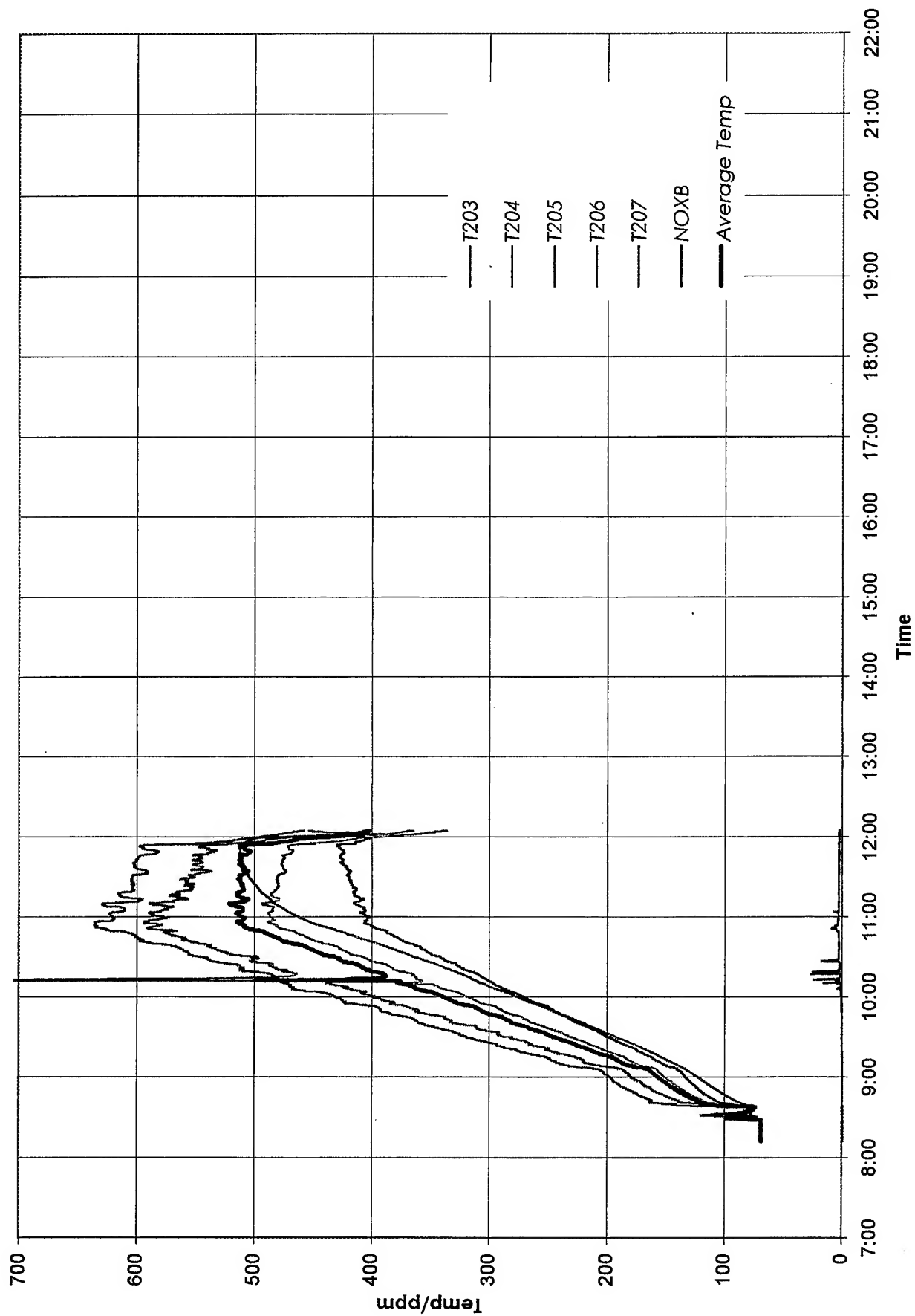
# TEST#11: NOx and Temperature



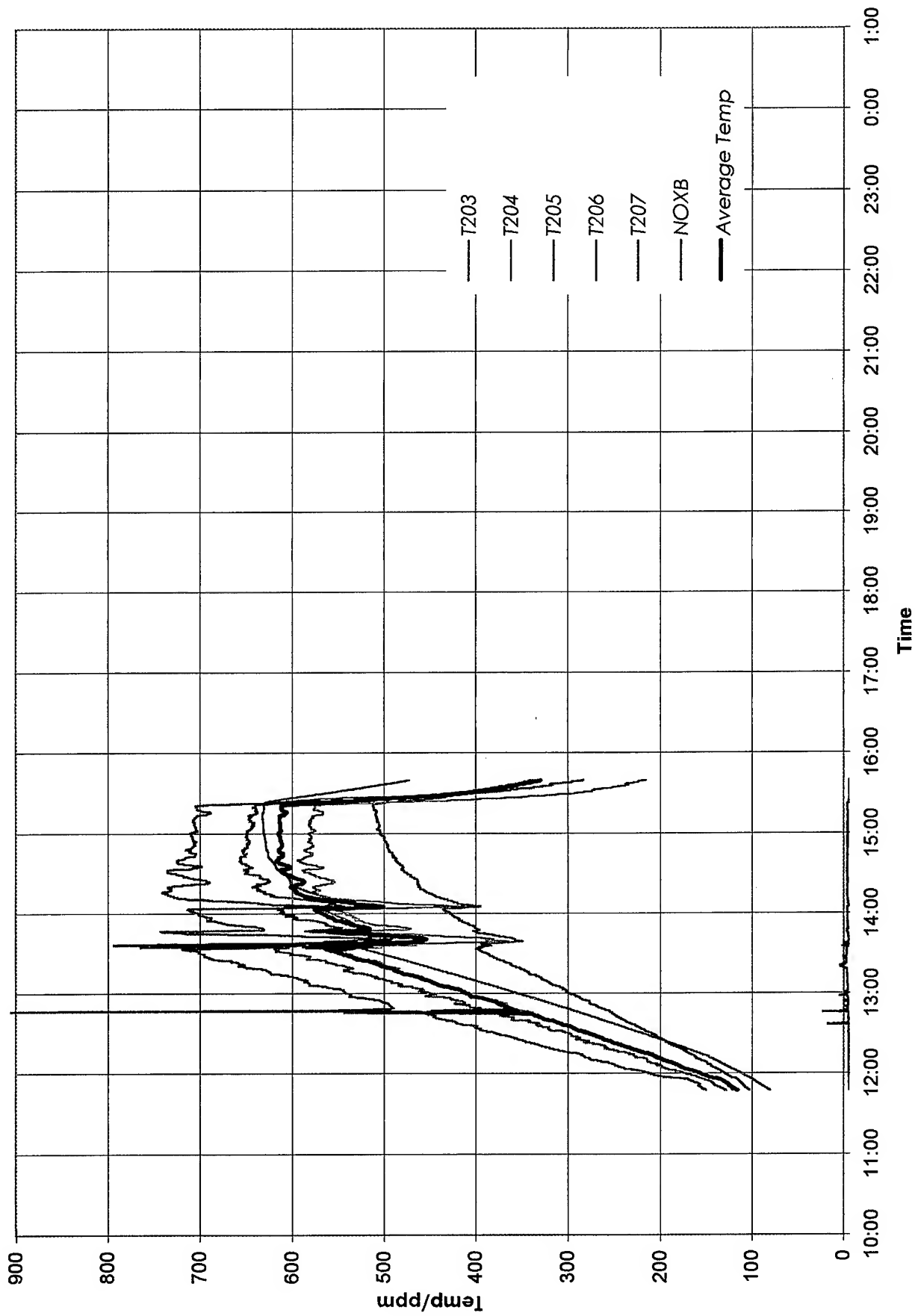
# TEST#12: NOx and Temperature



# TEST#13: NOx and Temperature



# TEST#14: NOx and Temperature



# TEST#15: NOx and Temperature

